THE

Journal of the American Medical Association.

EDITED FOR THE ASSOCIATION BY N. S. DAVIS.

PUBLISHED WEEKLY.

Vol. IV. CHICAGO, JUNE 13, 1885. No. 24.

ORIGINAL ARTICLES.

SUCCESSFUL RESULTS OF A NEW TREATMENT FOR DIPHTHERIA.[1]

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In *Gaillard's Medical Journal*, January, 1884, I published a paper on the "Use of Peroxide of Hydrogen in Diphtheria," which was intended only to bring before the Profession the value of that antiseptic as a local application in the disease. Although Peroxide of Hydrogen acts energetically and favorably when topically applied dissolving soft membrane and disinfecting the part, it seems to be absolutely devoid of constitutional action and has not the power to prevent the sequelæ of the disease in question, indeed a knowledge of its constituent elements would lead naturally to such a conclusion. This is painfully and certainly demonstrated in the following case:

Case 1. The patient was a young lady of seventeen years of age, in whom there was a tendency to tonsillar and pharyngeal congestion. The attack of diphtheria was preceded by one of tonsillitis of a mild form. The first symptoms were nasal, and the first visible membrane was upon the left tonsil, which was entirely covered within twenty-four hours with a patch of membrane about three-quarters of an inch in diameter. At this time, the patient could not breathe through the nose. The application of the peroxide was now commenced in earnest, and the assault was made simultaneously from all quarters. The brush, spray, gargle and douche being all called into requisition, so that the parts may be said to have been constantly bathed with the remedy, but no other medium was used in the treatment of the case. Within a week, patches of membrane, some of which were not less than two square inches in area were detached from the vault of the pharynx. Every trace of deposit had disappeared, and the case was discharged, and in a day or two she returned to her home in the country. In ten days her family and her physician wrote that she was attacked with a partial paralysis, which soon became general and total with severe local pains, and in another week she died, just seventeen days after the disappearance of the diphtheritic deposit.

[1]Read in the Section of Practical Medicine, Materia Medica, and Physiology, at the Thirty-Sixth Annual Meeting of the American Medical Association.

From the history of this case, it became evident that a constitutional antiseptic of considerable power must be found, which would prevent the development of the diphtheritic poison and preserve the nerve centers from its destructive influence. It has been found that the most powerful antiseptic and germicide was biniodide of mercury, as will be seen from the following table of Dr. S. Miguel: It gives the weight in grammes of each of these microbicides capable of rendering imputrescible one litre of beef tea:

Biniodide of mercury	0.025
Iodide of silver	0.03
Oxygenated water	0.05
Bichloride of Mercury	0.07
Nitrate of silver	0.08
Osmic acid	0.15
Chromic acid	0.20
Iodine	0.25
Chlorine	0.25
Hydrocyanic acid	0.40
Bromine	0.60
Chloroform	0.80
Sulphate of copper	0.90
Salicylic acid	1.00
Benzoic acid	1.10
Chromate of potassium	1.30
Picric acid	1.30
Ammoniacal gas	1.40
Thymic acid	2.00
Chlorides of lead, cobalt and nickel	2.10
Mineral acids	2.00 to 3.00
Binitrobenzine	2.60
Essence of bitter almonds	3.00
Carbolic acid	3.20
Permanganate of potassium	3.50
Aniline	4.00
Divers alums	4.50
Tannin	4.80
Sulphydrate of sodium	5.00
Arsenious acid	6.00
Boric acid	7.00
Hydrate of chloride	9.50
Salicylate of soda	10.00
Sulphate of the protoxide of iron	11.00
Amylic alcohol	14.00
Sulphuric ether	22.00
Butylic alcohol	35.00
Propylic alcohol	60.00
Borate of soda (borax)	70.00
Ethylic alcohol	95.00
Sulphocyanide of potassium	120.00
Iodide of potassium	140.00
Prussiate of potash	185.00
Glycerine	225.00
Urea (natural)	260.00
Hyposulphite of soda	275.00
Chlorate of soda	400.00

"Most of these substances act by paralyzing the evolution of the microbic germs, and by destroying the adult bacteria, but they have no effect on the

germs of the bacteria. Certain substances, however, have by their chemical action the power of completely destroying the germs of the bacteria, and to this class Dr. Miguel has applied the term 'sporicides.' The principal among them, are the preparations of mercury, and the salts of silver, which in a solution of 1-10,000 destroy the germs of microbes as surely as a dry temperature of 150° C. (302° in a few days F.) prolonged during several hours. Iodine, chlorine and bromine, and the mineral acids come next, but the microbicide *par excellence* is heat, which raised to 110 C. (130° F.) for liquids, and to above 150° C. (302° F.) for solids, has been found sufficient to effectually destroy the germs of the microbes."

That a large quantity of a powerful germicide is not necessarily required to attain the object in view, is admirably proved by the following extract from a forgotten source:

"The cultivation of micro-organisms which is now every where carried on, enables, us to realize the smallness of the change, which in many cases, suffices to convert a highly nutritive liquid into one incapable of supporting microscopic life. Various important essays bearing upon this subject have been recently published in the *Revue Scientifique*. M. Boulsy there draws attention to the results obtained by M. Raulin in the cultivation of the microscopic plant named Aspergillus niger. The omission of potash from Raulin's liquid, suffices to make the produce fall to one twenty-fifth of the amount collected when potash is present. The addition of an infinitesimal amount of a substance inimical to the life of a plant is attended with still more striking results. For example, one part in sixteen hundred-thousand of nitrate of silver added to the liquid entirely stops the growth of the plant. And now we come to the important application of this fact, which has been indicated by M. Duclaux. Supposing the aspergillus to be a human parasite, a living contagium, capable of self-multiplication in the human blood, and of so altering the constitution of that liquid as to produce death, then the introduction into the blood of a man weighing sixty kilogrammes of five milligrammes of the nitrate of silver would insure, if not the total effacement of this contagium, at all events the neutralization of its power to destroy life."

If then five milligrammes of nitrate of silver would produce this result, it was evident that a much less quantity of biniodide of mercury, which is three times as powerful, would probably answer the same purpose; but another important indication could be fulfilled at the same time—that of thoroughly disinfecting the mouth and fauces by means of a dilute solution of the "sporicide" kept constantly flowing over the mucous membrane. Following these indications, a weak solution of biniodide of mercury (one part to two thousand, one grain to about four ounces) in water was prepared, using iodide of potassium to insure the solution, and also diffusion of the remedy through the system. It was proposed to give of this five or six drops every ten or fifteen minutes, and it was intended that it should be used as a spray to the nostril if such a course became necessary. Experiences had shown that in cases having a thick deposit, some agent was required which would act upon and soften the membrane, preparing it for the solvent power of the peroxide of hydrogen on the one hand, and permitting the more thorough action of the "sporicide" solution on the other. To fulfill this indication, and following a French suggestion, *papayotin* was selected as being a much more powerful digestive agent, although somewhat similar in its apparent action to pepsin, pancreatin, trypsin, etc., and possessing in addition the property no less singular than valuable of acting equally as well in fluids having an acid or an alkaline reaction. The salient points of the treatment adopted are here as foreshadowed:

First. The frequent application to the membrane of the peroxide of hydrogen which will dissolve such portions of it as are soft and flocculent. The spray, with or without the soft camel's hair brush, will be found most useful in using this remedy, which can be applied also to the nasal passages.

Secondly. Having thoroughly cleaned away all the membrane which can thus be got rid of, powdered papayotin is applied to that which remains by means of a powder-blower, after which no food or medicine is given for twenty or thirty minutes, the object being to avoid as much as possible removing the papayotin from the membrane.

Thirdly After twenty minutes or half an hour, the use of the general germicidal solution, (the solution of the biniodide of mercury having thus far proved itself superior to any other), is resumed in the manner just indicated, that is to say, a few drops administered every ten or fifteen minutes.

This course is pursued until the membrane has disappeared, when the use of the peroxide of hydrogen and of the papayotin is discontinued, but the sporicidal solution is still to be administered, but at more distant intervals, nor should its administration be stopped until all danger of paralysis is passed. The amount of medicine thus administered, is marvelously small when compared with the results obtained, a single grain sufficing for from three days to a week even in the height of the disease. The longest period for which the biniodide was used in any one case was two months, and towards the last of that time but three doses a day were given. Occasionally, when there is evident depravement of the blood, a little syrup of the iodide of iron, proportioned to the age of the patient, has been added to the biniodide solution. Finally, if there is evidence that the disease has developed in the home of the patient, I strongly recommend removal to another house whenever it can be possibly effected.

Effect of iodide of potassium.—There seems to be some probability that iodide of potassium acts specifically, or at least assists in the specific action of the mercurial salt. Although this salt occupies a low position in the scale of germicides, it certainly can exist in the system in quantities quite sufficient to materially modify bacterial development therein. The urine passed by patients who were taking iodide of potassium, and which held the salt in solution as evidenced by chemical reaction has been kept by me for months without undergoing any apparent change, while the urine from the same patients before the ad-

ministration of the medicine underwent rapid decomposition. A similar condition has been observed to exist during the administration of salicylic acid (*Medical World*, Vol. III. P. 4), which may in some measure account for its value in the treatment of diphtheria.

If now the iodide of potassium, after being administered, can show itself in the urine in sufficient quantity to materially retard bacterial development, it certainly seems highly propable that its presence in the blood must tend to the production of a like result. It is therefore most unlikely that the iodide of potassium is an idle spectator of the germicidal operations of the biniodide of mercury, or simply a carrier of the latter salt, but it is rather present in the double rôle of a vehicle and a germicidal ally. In accordance with this view, the strength of the solution of iodide of potassium used to dissolve the biniodide of mercury should be as great as the comfort of the patient will permit. That the biniodide of mercury is present in the blood is proved by the fact that "during the internal use of the mercurial preparations the urine always contained mercury." (Neubauer and Vogel on the urine, P. 138). For this reason the urine should be frequently examined, and the presence in it of the iodide of potassium be verified by analysis, thus insuring the permeation of the system by the germicidal salts.

The rapid diffusibility of the iodide of potassium is a great argument in favor of its employment. It is reported to have been detected in the urine six minutes after administration, and according to M. Melseus, the activity of the mercurial salts is greatly heightened by its use. Again, by the constant use of small doses of the iodohydroargyrate solution the elimination by the kidneys is balanced, and a constant stream of the germicide is, as it were, kept flowing through the system. *Theoretically*, the frequent doses of the medicine are demanded to prevent the germination of the bacterial elements of the disease, which may take place at short intervals of time, the exact period being at present unknown. Whether this theory be absolutely correct or not, the plan of administering the medicine, founded upon it works well in practice. Incidentally, I would mention that this remedy acts equally as well in follicular tonsilitis, and in aphthous deposit in various localities. It is worthy of trial wherever there is an abnormal process going on dependent upon bacterial growth.

Alkaline Iodides.—The peculiar action of the iodide of potassium, naturally suggests the substitution for it of some other similar salt, such as the iodide of sodium or the iodide ammonium. Whether any of them would be an improvement upon the iodide of potassium, I am unable at present to say; it is to be hoped, however, that further observations will be made in this direction. The antiseptic powers of bromine would also suggest for its salts a trial.

Results.—Up to the time of this writing, peroxide of hydrogen has been used by me, either alone or combined with other remedies. In fourteen cases of these, three terminated fatally, and eleven recovered without any sequelæ. Of the three fatal cases, one was treated with the peroxide alone, and, although the patient recovered from the direct attack, still the death resulted from the secondary effects of the disease, and should therefore be credited to that malady. A detailed account of this case has been already given.

Case 2.—I was called to see a child about six years of age, which had been ailing with cold in the head, accompanied by an acrid discharge for several weeks, with occasional epistaxis. The appearance of the child was markedly that of blood poisoning. There was low fever from temp. 101, pulse 100, skin dry and sallow, upper lip excoriated from the nasal discharge, angle of the mouth cracked and scabbed, teeth covered with sordes, gums spongy and bleeding easily, tongue dry and black and with a tendency to crack; abdominal symptoms there were none, nor was any membrane visible in nostrils or in the throat. I treated the case for constitutional disturbance, but kept a constant watch for the membrane of diphtheria so as to apply local remedies. In two days a slight membraneous deposit was visible in the left nostril, and in another day, the tonsils were invaded. The treatment herein advanced was now adopted, except that a solution of corrosive sublimate, as recommended by Dr. Geo. G. Lynn, (JOURNAL AMERICAN MEDICAL ASSOCIATION, July 25, 1884. p. 94.) was used instead of that of the biniodide. This was done on the faith of various publications, and the report of personal acquaintances, who were using it in their practice. The treatment was faithfully pursued, but with the dying year my patient passed away, a victim to blood poisoning.

Case 3.—I was called in consultation to see a child about four years old, who had diphtheria about a week and was gradually getting worse under chlorate of potash, tincture of iron, quinine with a spray of lime water and carbolic acid. Peroxide of hydrogen was prescribed in spray, and pepsin blown into the pharynx, our supply of papayotin being exhausted. After a week of anxiety and suffering, death came to the relief of our little patient.

These three are the only fatal cases which have occured in my practice, in which the peroxide of hydrogen has been employed. It will be observed that in none of these cases was the full treatment, with the biniodide of mercury carried out. In the remaining cases, eleven in all, in which the new treatment was employed in its entirety, the results were eminently satisfactory, there not being a fatal case to record. The following is quite a typical case:

Case 4.—On November 15, I was called to see R. C., aged three years, with a marked diphtheritic deposit on both tonsils. The mother of the child said that for six weeks at least, there had been an acrid discharge from the nose with œdema of the nasal mucous membrane and epistaxis. These symptoms were passed by unnoticed, until the appearance of the membrane in the throat. I prescribed peroxide of hydrogen by spray and brush to be used frequently. Next day the membrane could be seen extending downward from the roof upon the back of the pharynx and peeping under the edges of the velum; evidently the posterior nares were involved, and probably the whole of the nasal cavity, as evidences of the membrane could be seen in the nostrils. I now ordered

ten drops of a solution of biniodide of mercury to be given every ten minutes, and powdered papayotin to be blown into the throat three times a day, and the spray of peroxide of hydrogen to be used every hour. It seemed, however, as if the reserve forces of the disease in the inaccessible portions of the posterior nares were to be victorious, for as fast as the membrane was removed by the remedies employed, it was reproduced, even encroaching a little upon the unaffected tissue in the interval between the applications; indeed it did descend to the larynx, and impending suffocation kept me for some days in constant expectation of having to perform tracheotomy, which the parents desired should be done if necessary. Fortunately, however, the progress of the disease was arrested, and the use of the remedies gradually discontinued, beginning with the papayotin, followed by the peroxide of hydrogen, the frequency of the doses of the biniodide of mercury being lessened, until three doses daily only were given, and this was continued until January 9, when it also was discontinued. The patient made a perfect recovery without any symptoms of unpleasant sequelæ.

In this case, the solution of biniodide was not sprayed into the nose, as it is now my custom whenever there is reason to suspect infection in the nares. When this is done, the solution of biniodide and the peroxide are used alternately, allowing a sufficient interval of time to elapse, so that the one solution will not decompose the other, as might be the case if they were used immediately after each other. In no case have I considered it necessary to blow the papayotin into the nostrils, because there is not here the danger of suffocation constantly before our eyes.

Case 5.—I was called to see R. F., aged about twelve years. Her symptoms were of some low type of fever, temp. 101, pulse 90, skin dry, face of a pale, dusky hue, eyes slightly suffused, no headache or other pain, bowels regular, urine normal, slight thirst, no appetite, tongue moist; there had been slight epistaxes but no abdominal symptoms, no glandular swellings. These conditions continued without any important variation for nearly three weeks, when a patch of diphtheritic membrane appeared in the throat, and shortly after I noticed it in the nostril, and now for the first time could any swelling of the cervical glands be detected. Treatment with sol. biniodide of mercury, and with the peroxide of hydrogen was now begun, using other remedies alternately by the atomizer to the nostril and to the pharynx, and cleansing out the throat twice daily with a brush. Within a week, all trace of membrane had disappeared, and the family having moved to another house, the child made a rapid r covery.

A few days afterwards, being called to the patient mentioned above, my attention was directed to a younger sister who was looking badly, but did not complain of being sick. Beyond her paleness and loss of appetite, and a little bleeding at the nose, which had recurred for several days, I could find nothing, until upon a very careful examination of the nostril I noticed a slight deposit, which of course stamped the case.

The remaining child, the youngest of the three, was next examined, and in her nostril I found a well developed membrane, although she never had shown the slightest sign of sickness.

The same treatment was pursued in these three cases; they all progressed favorably without noteworthy incident, and made good recoveries without any sequels. The occurrence of these cases, including all the children of the household, naturally led to an investigation of the causes, which lay behind this invasion of disease. Upon inquiry, I found that the mother and also the nurse of the children had been out of sorts for some time; the mother particularly complaining of sore throat, but without deposit; the father of the children, was in good health, but his occupation kept him much out of doors. The floor upon which the family slept was divided into three rooms, one of which was a bath-room containing a water closet. The door of the bath-room was within about a foot of the door of the room in which the children slept. These two rooms occupied the southern side of the building. I found that the doors and windows of all the rooms, including the bath-room, were habitually left open, so that the air from the bath-room had every opportunity to circulate through the sleeping apartments. This house was the centre tenement of a block of three houses, all newly built and recently occupied; yet in the house on one side of that in which my parents resided, there had been one or more cases of typhoid fever, and the inhabitants of the house on the other side were constantly ailing with malarial fever, they said. An inspection of one of the houses was made by a sanitary engineer, showing many defective points in the plumbing, one house being a type of the others.

The remaining cases developed no new features, and it is therefore unnecessary to burden this paper with an itemized report of them; they were all treated upon the principle already set forth, and in none of them was there any unpleasant result. I am confident, moreover, that several other cases of diphtheria have been successfully treated upon this plan, by the relatives of patients without calling in medical aid. The prescriptions were renewed, and the treatment carried out, as I had directed for other members of the same family, or in a friend's family. I am warranted in this belief by the descriptions of the cases given to me later; of course these are not included in the number mentioned here.

There are some cases of diphtheria, in which the membrane is almost the last, or among the last symptom to appear; or it might be safer, perhaps, to say, that the membrane appears very late upon a part open to inspection, if it appears at all. It is of vital importance to be able to diagnosticate such cases of latent diphtheria, and in some cases, I think it can be done with a fair degree of certainty. A strongly marked case of this kind is No. 2, and any case presenting such a train of symptoms, might be well looked upon as so suspicious that the physician would feel himself warranted in adopting an anti-diphtheritic treatment, even though he might hesitate to report such a case to the health authorities.

In discussing this plan of treating diphtheria, I may be met by the assertion, that the use of mercurial

salts as remedies in this disease, is old and well known; but be it observed, that I claim for the biniodide of mercury a greater power than is possessed by any other mercurial preparation, more especially when held in solution by iodide of potassium. It is a very common error to mentally group a series of preparations of one base as being one and the same in a therapeutic point of view; than this there can be nothing more erroneous, nothing more likely to lead to fallacious conclusions or to develop unexpected, if not disastrous results. Simply to say that a case of diphtheria was treated with mercury, is to say nothing. The preparation must be known, and as the mode of administration changes the therapeutic action of the remedy, this also should be stated. Even when most accurately described and most carefully followed, it seems often impossible to attain the results claimed for a remedy. Certain individuals seem to acquire a dexterity in the use of a medicine altogether unattainable by others. Thus some seem to succeed admirably with benzoate of soda in the treatment of diphtheria, others with chlorate of potash and muriated tincture of iron, others with salicylic acid, some with resorcin, some with pepsin and dilute sulphuric acid, etc. Let it be understood then, that I do not propose this as a specific treatment for diphtheria, warranted to succeed in every case, by whomsoever employed; but, I bring it before the Association as a method worthy of trial, at least, and as likely to prove useful in the hands of many practitioners.

Judging from the reports made to the Academy of Sciences, by M. Marcand. (*Lancet; Scientific American*, January 24, 1885), other vegetable juices may be found, which will act more powerfully upon the diphtheric deposit than papayotin, instance the agave. The author ascribes the action of these juices to a micro-organism, and as in the microscopic world, its members find their sustenance by the destruction of each other, so, in the depths of microscopic life the organisms subsist the one upon the other, and hence it is well within the range of probability that some microbe may yet be discovered, which will attack and destroy the bacterium of diphtheria; or it may be that other local applications will be brought forward, having a more powerful action upon the deposit, as for example iodoform, which I have seen acting well.

After a careful consideration of the subject, I think it may safely be asserted that no treatment of diphtheria is to be relied upon which neglects the possibility of blood-poisoning, and fails to provide a remedy for it. To summarize then the present treatment, it includes: 1, A blood antiseptic, which is also; 2, a local germicide; 3, a softening agent or digestor of the membrane; 4, a solvent of the membrane. Let us hope that the future will give one remedy combining these essential characteristics.

These suggestions, it is hoped, may be of some value in view of the possible, nay probable, bacterial origin of diphtheria (see *New York Medical Journal*, January 10, 1885, p. 49). In the matter of precautions to be taken to prevent the spread of diphtheria, the pamphlet issued by the Michigan State Board of Health, (*Gaillard's Medical Journal*, February, 1885, p. 1971,) might be consulted with advantage.

Dr. Sears, of Texas, while having no experience with the bin-iodide of mercury, had given the bichloride a fair trial, but could not recommend its use; indeed his success, no matter what drugs were used, was decidedly poor, as fully one-half of all his cases had proved fatal.

Dr. Walker, of Arkansas, remarked that in the city of Little Rock, Ark., the bin-iodide of mercury (the drug so highly lauded by Dr. Nunn) had been extensively used during an epidemic with the result that the profession there, numbering some forty regular physicians, had declared it worthless as a curative agent in diphtheria. The doctor, in common with many of his brethren, had at one time believed that potass. chlorate and tr. ferr. mur. freely used could be relied on to cure diphtheria, but a fuller experience with the disease had convinced him that it was futile to look for anything like specific effects from any course of medication whatever, and he feared that the treatment so highly spoken of by Dr. Nunn would prove no exception to the rule.

Dr. Catlin, of Wisconsin, had also congratulated himself on his ability to successfully deal with diphtheria; his plan was one or more large doses of quinine as an initiative, followed by tr. iron and potass. chloras in full doses frequently repeated. During one epidemic he had treated 80 cases in this way, and lost only one patient; but, unfortunately, in the next epidemic the treatment wholly failed. He could say nothing more favorable in regard to mercury, having given the bichloride in a sufficient number of cases to show that it produced no particular effect as a remedial agent in these cases. The disease was, to all intents, a blood-poison; patients suffered very much as they would after a snake-bite, and this offered the only correct clue to treatment, namely, alcoholics in anything like severe cases (and in mild cases little was required, beyond prudent hygienic measures) was the sheet anchor and ought to be given for their effect. The tolerance of alcohol in diphtheria was often as marked as in snake-bite. Of course proper nutriment, as milk, must also be administered as necessary.

Dr. Weichselbaum, of Savannah, Ga., had treated diphtheria with the iron and potash, and had seen no particularly good effects; indeed he had formerly concluded that it was a disease over which no known remedy had any good effect whatever; latterly, however, he had pursued a course similar to that advocated by Dr. Nunn, and he was bound to admit that the bin-iodide of mercury and the other drugs alluded to by Dr. Nunn in the paper just read exerted a really curative influence on the disease, an influence that so far as he knew was unparalleled in the history of diphtheria.

Dr. Upham, of Vermont, had been meeting with diphtheria in its various forms since 1860. His experience was quite extensive, and he had earnestly sought for some remedy in which confidence could be placed, but he confessed himself appalled at the terrible mortality of the disease, and the utter failure of treatment to lesssen that mortality.

Dr. Catlin was of opinion that we were yet in the dark, both in regard to the real nature of diph-

theria and the principles upon which treatment should be conducted, and considered that the vast number who are victims every year of the disease ought to stimulate intelligent enquiry on the subject of prophylaxis and treatment.

DR. HOLLIDAY, of La., having observed diphtheria ever since 1854, thinks it milder now than formerly. In regard to the problem whether diphtheria is a local or a constitutional disease in the beginning, the speaker was still unable to decide definitely; indeed, there were so many sources of error, that further observation by intelligent and impartial investigators was much needed to settle this vexed, though all important, question.

As regards the aphonia that is occasionally present in diphtheria, the speaker stated that it might be caused either by stenosis or œdema of the vocal cords and their allied structures, but so far as he knew we were unable to differentiate between the two processes. Dr. Holliday further remarked that recovery was rare in cases of complete aphonia occurring in the subjects of diptheria, yet it occasionally happened; in his own practice he had met with such recoveries.

DR. NUNN closed the discussion by remarking that he did not offer a specific for all cases of diphtheria, but as he had obtained results from the treatment outlined in his paper so much surpassing anything else with which he was acquainted, he merely wished the profession to fairly try his plan, and he believed that results the most beneficial could be looked for.

PRIMARY MALIGNANT DISEASE OF THE KIDNEYS.

BY GEORGE MINGES, M.D.,

OF DUBUQUE, IOWA.

(*Concluded from page 627.*)

Prognosis.—Unless interfered with by nephrectomy, malignant disease of the kidney inevitably ends in death in from four weeks to five or six years. One case has been known to last 18 years, but the average duration given by Roberts is 2½ years, being almost three times longer in adults than in children. By adding to Roberts' cases those of my table occurring since 1866, we find the average duration in 28 adults to be about 2½ years; in 36 children about 9 months. Of course these figures can only be approximative, and are probably below the reality, as the disease may remain latent for a time; yet the proportion is probably about correct.

Temporary improvement has occurred in several cases, but sometimes this was due to the removal of complications. The fatal termination is generally brought about by a gradual wearing out of the vital powers, although sometimes death occurs rather unexpectedly.[1] It may also be hastened by rupture into the peritoneal cavity or perforation of the parietal walls. The occurrence of profuse hæmaturia, as a rule, does not hasten the termination, although in Döderlein's case death is said to have occurred from hæmorrhage into the tumor, and in one of my cases almost continuous vesical tenesmus came near causing death.[1] Uræmia has been the determining cause of death in a few cases,[2] and in one case stercoraceous vomiting.[3] The inferior vena cava being filled with clots in such a great proportion of cases, I am surprised not to find any deaths from embolic processes.

According to Roberts, cancer of the kidney proves fatal less quickly than cancer of other internal organs, probably because there is another kidney to perform the functions of the diseased one, and because, from its situation, it has sufficient room to develop for some time without interfering with the functions of other vital organs.

Treatment.—In the majority of cases of cancer of the kidney, the treatment will have to be symptomatic, as the diagnosis is generally made comparatively late. The pain, which is present in a certain proportion of cases, must be subdued by anodynes, gastric symptoms met according to the individual indications, and by tonic treatment and nourishing diet the fatal termination may perhaps be postponed for a short time. As it at present seems a fashion to give arsenic for all varieties of malignant disease, it is perhaps well to administer it in these affections, although it is doubtful whether any benefit is derived from it. The hæmaturia, when profuse, demands attention, and sometimes severely taxes the skill and patience of the physician. Absolute rest in bed is to be enjoined, anodynes administered to allay anxiety and irritation, and stimulants and drugs which irritate the kidneys avoided, although small doses of turpentine may have a hæmostatic influence. Cold may be applied externally, and ergot, acetate of lead, gallic acid, and other astringents given internally. Generally the hæmorrhage finally ceases, probably spontaneously, perhaps never to return, or, it may be, to come again in frequent attacks. Vesical tenesmus, due to the passage of clots, is to be relieved by anodynes and, if necessary, by washing out the coagula through a catheter, with tepid water or mild alkaline and antiseptic solutions. I will now present the report of the following unique case, a partial report of which I have already made to the Dubuque Medical Society, in February, 1880, under the title of "A Case of Paroxysmal Hæmaturia; Operation of Cystotomy to Remove Clots; Improvement."

Case V.—Dr. H. J. R., of Dubuque, Swiss, æt. 69 years, came under my treatment in November, 1879, for hæmaturia, which had troubled him at intervals for several years. During childhood he had enuresis nocturna, and since that time he has been forced to arise three or four times every night to urinate. The attacks of hæmaturia came on without premonition in the midst of apparent good health, generally after drinking beer, and lasted from a few hours to several days; generally causing no symptoms aside from a sudden and imperative desire to urinate, and not hindering him in the fulfillment of his professional duties. As a rule, the hæmorrhage was slight, the blood being intimately mixed with the urine. Four years ago, retention was several times caused by large coagula, necessitating the use of the catheter, and once he was picked up in the streets insensible, remaining in that condition until morning. For a while patient discontinued the use of alcoholic beverages and soda-water, as they seemed to stand in a causative relation to the attacks. On January 14, 1880, having had no hæmorrhage for several weeks,

[1]Cases 6, 31 and 57 of table.

[1]Case 57 of table.
[2]Cases 7 and 12 of table.
[3]Case 34 of table.

he drank two small glasses of beer in the evening, and next morning there was some blood in the urine. The hæmaturia could not be arrested longer than for a few hours at a time in spite of all treatment; it increased in intensity, and the patient had to be kept under the influence of narcotics all the time. His condition became so bad that it was determined to perform cystotomy in order to allow the clots to escape through the perineal wound as fast as formed, and thus prevent the tenesmus. He was almost moribund when the operation was performed, on January 30, by Dr. Benj. McCluer, assisted by Drs. J. S. Lewis, J. H. Greene, and the writer. A median incision was made, and some clots two inches in diameter were evacuated. During the night there was considerable tenesmus from time to time, and narcotics were freely used, the patient being quite collapsed.

On the following morning the urine was free from blood, and remained so for nine or ten days. From the morning after the operation the patient quickly rallied, and needed no medication whatever. At no time was there any fever. After two or three days he could retain his urine for three or four hours at a time, but the wound was kept dilated, so as to be prepared for future attacks. In about two weeks some urine began to escape from the urethra. Slight hæmorrhage recurred occasionally, and on the eighteenth day after the operation about half a pint of pure arterial blood was passed, forming a jelly-like cake at the bottom of the urinal. The wound in the perineum was therefore dilated every few weeks.

In the paper above mentioned, the writer held that the hæmorrhage was of renal origin, because he could feel nothing abnormal in the bladder, but principally because long, worm-shaped clots were sometimes found in the urine, which obviously came from the ureter, yet he was certain that he did not have to deal with malignant disease, on account of the complete absence of pain and tumor, the long duration of the disease, and the good general condition of the patient. In the intervals between the attacks of hæmaturia, the urine showed absolutely nothing abnormal. Frequent hæmorrhages, some of them profuse, occurred up to June, 1880; but as a precautionary measure the wound was kept open for a month or two longer.

During the persistence of the fistula, patient was able to control his urine perfectly, and attended to his professional business. About the middle of March some obscure swelling was manifested in the left lumbar region, very slightly tender on deep pressure, and some œdema of the ankles; yet the urine remained normal. After July, 1880, except œdema of the legs, some cachexia and emaciation, and very troublesome insomnia, nothing noteworthy was observed until about January, 1881, when there appeared a very annoying, itching, scaly eruption over the whole body. The itching became almost unbearable, and patient's bed was thickly strewn with scales. In the spring this eruption completely disappeared. The tumor in the loin did not seem to grow much, and there was no pain. The most annoying symptom was insomnia. Patient tried to practice, but memory began to fail him. No more hæmorrhages occurred until a few weeks before death, when the urine was occasionally tinged with blood. About the middle of November, 1881, he experienced considerable pain in the lumbar region, and died, rather unexpectedly, about two weeks afterwards, six or more years after the first hæmaturia, and almost two years after the performance of cystotomy.

The autopsy showed the left kidney enlarged five or six-fold, and containing encephaloid material in a firm capsule. The tumor lay behind the intestines and did not reach the anterior parietes. Ureter and bladder normal, also prostate gland. Right kidney hypertrophied. This would have been an excellent case for lumbar nephrectomy, on account of the small size of the tumor, the good general condition of the patient, and the absence of secondary deposits.

Nephrectomy.—The dictum of Ebstein in 1876, that our profession celebrates no triumphs in the treatment of malignant tumors of the kidney, is no longer founded on fact; for the results so far obtained in these cases by nephrectomy, although by no means brilliant, still justify a hope for the attainment of better results in the future. Already great advances have been made. In 1884, Homans[1] tabulated 26 cases of nephrectomy for renal malignant disease. Of these only 8 recovered and 18 died. Less than six months later Billroth[2] reported 33 operations, with 13 recoveries and 20 deaths, or 7 new operations, with 5 recoveries and only 2 deaths; a wonderful improvement for so short a time. Strange to say, Weir,[3] although referring to the article just mentioned, in his paper published six months later, forgets to add to his collection of 33 (32?) cases, Billroth's two successful operations and a third one reported as doing well after two days, and hence arrives at the conclusion that the results of nephrectomy have not improved lately. Billroth shows why the results thus far have been so unsatisfactory, when he says: "We cannot be surprised (at the results) when we read with shuddering what has been dared in this field. Tumors the size of two heads, in old, marastic subjects, large encephaloids in debilitated children, were operated upon, and several of the operated died upon the table. Here also many errors of diagnosis. Too much certainly has been attempted in this line."

History.—Nephrectomy was first performed unintentionally, in 1860, by Walcott, of Milwaukeee, he having mistaken a cancerous kidney for a hepatic cyst.[4] Patient survived 15 days. Next, Peaslee, also unintentionally, extirpated a renal tumor while intending to perform ovariotomy. The first intentional, and also the first successful nephrectomy, was that performed by Simon, of Heidelberg, for uretero-vaginal fistula. The first successful nephrectomy for malignant tumor was done by Langenbuch.

As for the ultimate results so far obtained, two of those operated upon were living 30 months after operation, one after 22 months, and one after over a year. The youngest child, 11 months old, was operated by Czerny, and died in three days. The youngest child successfully operated upon was 2½ years old, but it died of recurrence in 9 months. One case died of recurrence five days after discharge from hospital.[4] Hicquet, of Liège, removed a sarcoma from a girl of 6 years.[5] Recovery was complete in two weeks, but I have not been able to learn the ultimate result. S. W. Gross[6] finds the disease to recur in about one-third of the cases; but primary malignant disease of the kidney has less tendency to invade surrounding structures than other internal cancers. According to Kühn, secondary growths occur in 28 per cent. of cases affecting children, in 44 per cent. of those affecting adults. In my table I find too few data on this point to be of much value. The immediate results of the operation are about the same in children and adults; for in 20 adults the operation was successful in 6, in 6 children it was successful in 2.[7]

Connecting this fact with Kühn's observation as to the comparative rarity of secondary deposits in children, and remembering how rapidly fatal these tumors are in childhood when not interfered with, Dr. R. P. Harris[8] does not seem justified in saying: "We are not prepared by the evidence of final

[1]Boston Med. and Surg. Jour., January 24, 1884

[1]Wien. med. Wochensch., 1884, Nos. 23, 24 and 25.
[2]Med. News, December 27, 1884.
[3]Phil. Med. and Surg. Reporter, 1861, p. 126.
[4]Richard Davey's case in table.
[5]Bull. Acad. Med., Belg., 1882.
[6]Med News, June 9, 1883.
[7]I had arrived at these conclusions from the study of Dr. Homan's case already referred to.
[8]Am. Jour. Med. Sciences, July, 1882.

ANALYTICAL TABLE OF SIXTY CASES OF PRIMARY

				SYMPTOMS.								
				TUMOR.								
No.	By whom and where reported.	Age. Sex. Side.	Cause.		Mobility.	Relation of Intestine.	Hæmaturia.	Pains.	Gastric.	Urine.	General.
1	Langstaff. *Cyclopædia of Practical Medicine.* Revised by R. Dunglison. Ibid.	Young Adult. F R		After 6 weeks in hypochondrium, pulsating.			Arterial: several attacks.	In 6 wks. dull pain, tumor tender.	Bilious vomiting.	Much and limpid; sediment muco-purulent.	1st sympt'm vesic'l tenesmus, much limpid urine; hæmaturia; much reduced; rallied wonderfully bet. atta'ks
2	Ibid.	70 M L					Tinged.	Great in kidney.		Difficult urination, then retention.	
3	Bence Jones. Braithwaite, xxx, 85. *Med. Times & Gazette*, June 17, 1854. p. 613.	45 M R		None noticed during life.			Yes.	Under ribs and loin, first symptom, then thigh and groin.	Bowels regular.	Alw'ys some blood globules and oxalate of lime.	In 1½ yrs. intense neuralgia of face & back of head; in 2½ yrs. hæmoptysis; no cachexia.
4	Ibid.	57 M L		None noticed during life.			Occasionally after exercise.	Some in loin.			No cachexia.
5	Charles West. "*Diseases of Children.*" 1866.	2 yrs. 10 mos. M		Enlarged abdomen.			Few days in early part.		Craving appetite. Some diarrhœa.		Languid and fretful.
6	Ibid.	14 mos. F		In one week.			None.	In abdomen.	Somevomiting. No diarrhœa.		
7	Ibid.	6¼ yrs. F		Six weeks after vague symptoms.			In 3 m. copious & often, to d'th	Scarcely any.	Frequent diarrhœa.		Anasarca.
8	Roberts. "A Practical Treatise on Urinary and Renal Diseases," 1866.	59 F R		Since 2 years. Enlarged veins.		Colon crosses obliquely.		After a time pain and feeling of crumpling parchment.	Diarrhœa.		
9	Ibid.	6 F L		Abdomen large from birth, at death 42 in. in circum. Enlarged veins.		Descending colon in front.			Voraci'us; thirsty.	Normal.	Œdema; orthopnœa.
10	Tyson. *Phil. Med. Times.* Vol. XXX, p. 429.	52 M R		About 16 mos. To crest of ileum.			Two yrs., gradually increasing, with clots.	Intense pain 6 yrs. explained by passage of a calculus; final'y constant.		No casts.	Emaciation and weakness; in bed 16 mos. with paraplegia and incont. of urine. Œdema of legs.
11	Albert H. Smith. *Am. Jour. Obstet.* Vol. III, p. 476.	3½ M L	No heredity.	Began in 3 mos. In 1 mo. more began growing; smooth; no fluctuation until 8 mos. Veins enlarged. No tumor in loin.		In front & to right; later to right.	Pureblooded day and just before death.	Occasion'l short attacks; after 5 mos. agonizing.	Appetite and digestion good; constipa'n after 7 mo.	Trace of alb. Total suppression for 2 days; difficult micturition.	First 5 mos. perfe't health; after 6 mos. emaciation, hectic fever, and œdema of left leg.
12	John Guitéras. *Phil. Med. Times.* Vol. III, p. 592.	68 M R		Abd'men large; dilated veins; not examined for tumor.			3 attacks in hospit'l, last one profuse.	None.		No albumen nor casts.	Œdema, ulcers of legs and anæmia, all of which disappeared; dyspnœa
13	J. C. Wilson, of Edinboro, Pa. *Med. & Surg. Reporter*, for 1873. Vol. XXV, p. 548.	2½ M R	Another child died of indurated mesenteric glands (?)	Projected beyond knees when sitting. Elastic above, firm below; not tender. Some fluctuation after 3½ months.	Somewhat movable	Whole intestinal canal below stomach in front of tumor.	1st symptom profuse hæm. with clots for some time, then no more.	None.	Dyspepsia at times.	Epithelial sediment.	No emaciat'n first 3½ months; then sunken expression, dyspnœa, temporary improvement; couldn't stand last 6 weeks.
14	Krackowitzer. Reported by Jacobi. *Am. Journal Obst.* Vol. VII, p. 276.	4½ R		Size of large cocoa-nut when 7 or 8 mos. old.	Slightly		Yes.	None.			None.
15	*London Lancet*, Oct., 1879, p. 617.	28 M L		Since 8 months.	By pressure in loin.	Transv'se colon and small intestine in front.	Urine tinged for 4 months.	Since four mos. pain in loin; disc'mfort over blad.	Occasion'l vomiting and diarrhœa.		Great emaciation; temp. never above 100° F.
16	Wm. H. Geddings, Aiken, S. C. *Gyn. Trans.*, Vol. II, p. 479.	3¼ F Negro. L	Parents healthy.	Since 9 mos. Hard, nodular, not fluctuating.		Transv'se colon gave tymp. resonance at ant. lower part.		None.	Ravenous appetite; bo'els regular.	Milky at first, leaving white stain.	No fever; played about; confined to bed only last two days.
17	Jesop. *London Lancet*, June 17, 1877.	2 yrs. 3 mos. L		Two months ago.			1st symptom.				Anæmia and emaciation.
18	Langenbuch. *Berl. Klin. Wochensch.*, 1877, No. 44.	32 F L		Globular, smooth.	Somewhat fr'm side to side.		None.	Since 18 months in lumbar region; now intolerable Immediately after injury.	Good appetite.	Perfectly normal.	Vigorous.
19	E. A. Waggener, Carrollton, Mo. *St. Louis Med. & Sur. Jour.*, Vol. XXXVIII, p. 301, 1880.	3½ yrs. M L	Trampled on by a colt.	Began 10 days after injury. Tumor elastic, from rib to ileum, and 1 inch beyond med. line.							

MALIGNANT DISEASE OF THE KIDNEYS.

				PATHOLOGY.					
				DISEASED KIDNEY.					
Diagnosis.	Operation.	Result.	Duration.	General Appearance.	Variety.	Size.	Adhesions.	Secondary Deposits.	Other Kidney.
Enlarged liver.		Fatal.	5½ years.	Nodular, surrounded by condensed peritonæum; contained a layered clot weighing 3 lbs.		11 lbs. 13 ozs.	Liver.		Several enlarged pulpy tubera.
		Died of apoplexy.							
Scrofulous disease of kidney.		Died of hæmoptysis.	2½ years.	Globular; no kidney structure left; pelvis dilated, filled with encephaloid material; ureter blocked by encephaloid to within 2 or 3 inches of bladder.	Encephaloid.			None found, lungs healthy.	Healthy.
Renal calculus.		Fatal.		Hard, infiltrated throughout with white solid encephaloid matter.	Encephaloid.			Liver & lungs, Lymphatic glands much enlarged	Healthy.
		Fatal.	10 mos.		Medullary and fungus.	Size of head.			
		Died suddenly.	10 wks.		Medullary and fungus.	Size of head.			
		Died in coma.	10 mos.		Medullary and fungus.	Size of head.			
Cancer of ovary.		Fatal.		No kidney structure left.		Double Normal size.	Partly to colon, closely to liver.	None.	
		Fatal.	symptoms. 1 year.				Descending colon imbeded in tumor.	None.	Enlarg'd.
Impacted calculus; later suspect'd true nature.		Fatal.		Trabecular interstices filled with cancer-matter.	Encephaloid		Stomach.	Lungs & liver, 3 or 4 vertebræ eroded.	Enlarg'd.
	Aspirator obtained no fluid.	Sank gradually.	9 mos.	Tense, elastic tumor with thickened capsule; no kidney structure left; ureter dilated and filled with organized clot.	Encephaloid, stroma of spindle-cells.	3½ lbs.	Descending colon only.		Moderately enlarged.
Scurvy.		Di'd in coma and convulsions.			Encephaloid.	Size of fœtal head.		None; Vena cava occluded by clots.	
Non-malignant tumor of kidney.		Fatal.	7 mos.	Large tumor enclo'd in dense fibrous capsule; only soft pulpy mass in pl. of kidney.	Encephaloid with large clots.	20 lbs.	Whole intestinal canal.	Only in left lung.	Double normal size.
Cancer or cyst of kidney.		Died under chloroform during examination.	About 4 yrs.	Homogeneous, soft, reddish; remainder of kidney external to tumor.	Round and giant-celled sarcoma.	3 to 4 lbs			
		Sank rapidly.	9 mos.	Hard masses of colloid matter and encephaloid cysts. ⅓th kidney unchanged; pelvis dilated; ureter pervious.	Cancer.	32½ oz., 7x5x2½ inches.		Abdominal glands.	Large & granular.
Malignant tumor of kidney.		Fatal.	9 mos.	No kidney left; ureter lost in tumor.		13½ lbs. 11x8 in.	Stomach, colon, and near vertebræ.	Small nodules in liver.	Normal.
Malignant disease of kidney.	Nephrectomy. Incision as in lumbar colotomy. Whipcord ligature en masse.	Rec'd fr. op. died of recur. in 9 mos.			Encephaloid.	16 oz.			
Perinephritic tumor.	Nephrectomy under Listerian precautions. Incision from angle of twelfth rib to ileum.	Recovery.		One large cyst into which the remainders of pyramids hung in the shape of threads; ureter thickened and dilated.		8x5x2½ inches.	To lumbar muscles.		
		Fatal.	5 mos. (?)	Large tumor crossed by colon; considerable cortical portion and some pyramids remaining.		9½ lbs.	Spleen, pancreas, stomach, diaphragm.	Numerous small absesses in liver.	Healthy.

ANALYTICAL TABLE OF SIXTY CASES OF PRIMARY

				SYMPTOMS.								
				TUMOR.								
No.	By whom and where reported.	Age. Sex. Side.	Cause.		Mobility.	Relation of Intestine.	Haematuria.	Pains.	Gastric.	Urine.	General.
20	T. Davis Fitch. *Chi. Med. Jour. & Examiner*, Vol. XXXV, p. 148.	2 yrs. 7 mos. L.		Hard tumor reaching almost to sternum.				Causing lameness, first symptom.		Normal,	Pale, collapsed countenance, some fever.
21	Shrady, N. Y. *N. Y. Med. Rec'd*, 1880, XVIII, 326.	L.		27 inches around abdomen at umbilicus.						No albumen or blood.	Average temperature, 100½° F.
22	J. Lewis Smith, N.Y. *N. Y. Med. Rec'd*, 1880, XVIII, 326.	19 mos. L.		From ribs to ileum.	Tumor tilted forward by pressing on kidney.				Evacuat'n of mucous streaked with bl'd; avers'n to for. food.	Scant, sometimes alb'n.	Drooping 6 mos.; temp. 101°–102° F.
23	William H. Byford. Chicago. *Gyn. Trans.*, Vol. V, p. 71.	39 F L.		Fluctuation over whole abd'en, not changing with position. Hard, nonfluctuating tumor, very movable, shape of fœtus, felt by deep pressure.	Very mov'ble, seemed to have no connection, felt like uncastra-uterine fœtus.				Indiges'n, alternat'g diarr. and constipa'n	Normal.	Menses irregular and frequent, not copious. Has not been well for 18 mos., much emaciated, hysteroepilectic attacks, jaundice.
24	Wendt. *Med. Record*, May 1, 1880.	Elderly M.		Very large.							
25	Jacobi. *Am. Jour. Obstet.* Vol. XIV, p. 113.	3½ yrs. at death M L.	Grandmother had cancer.	Began 2 mos. after hematuria, mostly solid, but fluctuating in places.			1st symptom 2 yrs. ago after suppress'n and coma.	In 9 mos. much in abdomen.	Good appetite, b'wels regular, occas'l vomiting.	Fre. urinat'n sometimes reten'n without hæm'ria, trace of alb.	General condition good until near end, then emaciation and insomnia.
26	Mr. A. Barker. *London Lancet*. March 30, 1880.	21 F R			Mov'ble		Almost constant & often profuse during last 30 days.	For 8 mos. lumbar pain, intense for 3.	Frequent nausea & vomiting.	Nothing but blood-corpuscles.	Weak,
27	Czerny, of Heidelberg. *Centrabl. f. Chirurgie.*	50 M L		Large tumor 2 yrs.	Slightly movable	Colon fo'd in front by injecting water.		In tumor.			
28	Skene. *Am. Jour. Obstet.* Vol. XII, p. 741.	3 yrs. 3 mos. L.							Some gastric derangem't.		Emaciation, temp. imp't, so that med. attenda'ce was discontin'd for a time.
29	Kocher. *Deutsche Zeitschr. f. Chirurgie.* Band IX, Heft, 3 & 4	2½ L.		Noticed shortly after birth. Spherical and firm, with cylindrical project'ns.	Freely upw'rds & downwards & somew't in median line.	Not felt in front, but found in operation.				Normal.	Rapid emaciation last 20 to 30 days. [Peritonitis,
30	Van Denburg. *Am. Jour. Obstet.* Oct., 1881.	7 F R		Noticed 6 weeks after first pains. Dullness continuous with liver from beginning.		Descend'g found on autopsy like umbilical cord.		1st symptoms some pain in bowels then occur'g in paroxysm every 5–8 days from liver to scap.: tumor ten'r.	At first app. poor, then fair. bowels pretty regular, bil'us vomiting.	Uric acid crystals,	Fever 102°, pale, anxious countenance, bluish aro'd mouth, œdematous last few weeks, no jaundice; œdema of feet at end: well set, paroxysms.
31	Edgerly. *Bost. Med. & Sur. Jour.*, CIV, 131.	7 F L.		Some swelling under ribs. Then nipple to pubes and across median line. Indistinct fluctuation above, hard below.				In left side sev. w'ks; tum. ten'er		Always-loaded normal,	White corpuscles increased.
32	C. Ellerly Stedman. *Bost. Med. & Sur. Jour.*, CV, 440.	4 F L. and R		Swelling in flank, crossed by large veins.		Colon crossed ¼ way down	None.	Little or none.	Capricious appetite,	Amt. normal ½ % albu'n; granular and hyaline casts	Convulsions, œdema of legs and body, temp. 99°–102° F.
33	Goss. *Bost. Med. & Sur. Jour.*, CVIII, 57.	55 M L.		Noticed only occasionally during last few weeks.			None.	In abdomen.	Nausea, some vomiting.	At first normal, later albumen and casts; uræmic convulsions 3 wks.	Phthisis in family; consid'able cough, improved at seashore, dulness of left lung, uræmic convulsions last 3 weeks; cancerous cachexia.
34	Dowse. *Brit. Med. Jour.*, 1873, Vol. II, p. 586.	L.		Large superficial veins.				2 y. paros. of pain in loins.	Diarr. and sickness; at end stercor'c's vomiting.		Cachexia, collapse.
35	Walter Whitehead. *Brit. Med. Jour.*, Nov. 5, 1881.	46 F R		Yes.	Freely mov'ble.	Not crossed by colon, as proven in operation.	Yes.	None.		Mixed intimately with blood; no casts; large r'd cells with large nuclei.	Beginning to be impaired.

MALIGNANT DISEASE OF THE KIDNEYS.

				PATHOLOGY.					
				DISEASED KIDNEY.					
Diagnosis	Operation.	Result.	Duration.	General Appearance.	Variety.	Size.	Adhesions.	Secondary Deposits.	Other Kidney.
		Fatal,	1 mo. after lameness,	Cancer containing cysts filled with large clots; no normal kidney structure remaining.	Cancer, with cysts containing large clots,	2 lbs.		Doughy swelling of gum; tumor ab. Pouparts ligam't. Liver.	
		Fatal.	4 mos.	Diffluent; colon crossing tumor in front.					Hypertrophied.
Enlarged spleen,		Fatal,	7 mos.		Myxosarcoma,			Pancreas absent not stat'd whether destroyed by disease.	
Probably renal tumor,	Tapped of fluid; abdominal incision under spray; evacuated 16 to 18 lbs. fluid; tumor attached by 2 broad peritoneal folds which tied by transfixion and tying in 2 portions	Living after 30 mos.	19 mo.		Encephaloid,	8x6 in., 4½ lbs.	Two broad peritoneal folds to lumbar region.		
		Died of progressive marasmus,	5 yrs.	Solid tumor; no kidney structure left.	Sarcoma,		Partly to other viscera		Double size.
Sarcoma of kidney,	Aspirated at several points, obtaining only a little blood.	Fatal,	2 yrs.	Solid tumor, containing nests of still more solid portions; no kidney remaining.	Sarcoma,	Size of head.			Normal.
Movable kidney; later movable encephaloid kidney,	Nephrectomy; incision as in ovariotomy; strictly antiseptic. Ureter tied separately; pedicle in two portions with twisted silk.	Died in 2 days of pulmonary thrombosis,	8 mos.	Very soft in places.	Encephaloid,	7x4½x 4½ in., 30½ oz.		Small nodules in lungs and lumbar glands, suspicious specks in liver.	Healthy.
Renal tumor,	Ventral nephrectomy. Tumor so friable as to break down and cause haemorr., controlled only by ligature of aorta.	Died in 10 hours,	2 yrs.	Very soft, large tumor; colon in front.	Medullary sarcoma,	Large,	Meso-colon,	Meso-colon,	
Enlarged spleen,		Fatal from exhaustion,		Solid tumor.	Sarcoma,	5 lbs., 7 oz.		None,	
Fæcal tumor, enlarged spleen or renal tumor,	Exploratory puncture gave only a few drops of blood. Extirpation by abdominal section. Ligated pedicle.	Died in convulsions on third day	Over 2 yrs.	Soft reddish tumor, with clear juice; remainder of kidney expand'd about tumor; tough capsule around outside; colon in front of tumor.	Adeno-sarcoma cells in form of tubules; abundant embryonal tissue.	3 lbs.			Hypertrophied.
Hepatitis, Gallstones. Multiple hydatids of liver,	Aspirated several times, once three pints fluid looking like mucilage, streaked with bl'd.	Fatal,	5–6 mos.	Roundish tumor enclosed in firm capsule, containing numerous cysts, adherent to liver; ⅓ of kidney remain'g behind tumor; calyces filled w. white substance, ureter seemed pervious.	Cyst-adenoma or cysto-sarcoma,	25 lbs.	So intim't'ly with liver li'e of dem. co'ld not be felt; sto'ach atrophoid look'g like div'cl'm of oesophag.	Thin, pus-like fluid in mesenteric glands,	Perfectly normal.
		Fatal,	16½ weeks	Tumor of brain-like matter.	Sarcoma,	Nipple to pubes across linea alba.			
		Little urine for 2 days; died quietly.		Large tumor behind left kidney, not involving the same; right kidney contains several nodules, some encapsulated; cortex normal, no communication with pelvis.	Sarcoma,	Largest, R 3 x, normal size,	Pancreas, spleen and colon,	One mesenteric gland,	
Suspected cancer last few weeks,		Died from exhaustion,	2–3 years	Kidney enlarged to 3 times its normal size, little structure left, pelvis dilated.	Medullary cancer,	3 x normal size.		Left lung contains nodule size of lemon,	
		Died rather suddenly of collapse.			Sarcoma,	6 lbs.	Around duodenum and colon,		
	Nephrectomy. Longitudinal incision with transverse at right angles; vessels ligated; ureter tied separately bet. 2 ligatures; large drainage tube through transverse incision.	Died 4 days after operation; cause obscure,		Firm tumor, covered by friable vessels.	Probably sarcoma; large, round cells with large nuclei,	1 lb., 4 oz.	To diaphr'm by tough band,	None in abdominal viscera,	

ANALYTICAL TABLE OF SIXTY CASES OF PRIMARY

No.	By whom and where reported.	Age. Sex. Side.	Cause.	SYMPTOMS. TUMOR.	Mobility.	Relation of Intestine.	Hæmaturia.	Pains.	Gastric.	Urine.	General.
36	Richard Davy. *Brit. Med. Jour.*, Oct., 1884.	53 M L		Yes.							
37	T. Johnson Alloway. *Am. Jour. Obstet.*, 1883, Vol. XVI, 881 and 993.	5 yrs. F R	Struck post after falling down stairs. A paternal aunt at 6 had lump in side which disappeared in 2 years.	Lump in side 3 mo. after accident. Latter continuous dulness from liver to 1 inch above ileum. Fluctuations over whole tumor; veins not much dilated; in beginning bruit without pulsation, which soon disappeared.	Movable by hand and during respiration.	Colon to left border	None.	P'n in belly toward end of ev'g; tum. not tend'r.	Somevomiting in beginning, app. fair, constip'n and diarr.	Normal; frequent micturition.	Great emaciation, no jaundice, no œdema, no fever.
38	W. G. Wheeler. *Bost. Med. & Sur. Jour.*, Vol. CX, p. 106.	69 M		Not discovered until removing 16 lbs. ascetic scid.			Not before 4 weeks ante mortem.	None.	No vomiting.		Œdema of legs & ascites.
39	H. Lossen. *Deutsche Zeit. f. Chir.*, Bd. XIII, p. 199.	37 F R		Firm tumor for 12 mos., rapidly enlarging.	Very movable as far as median line.			None.		Normal; much diminished soon after op., but soon normal amount.	Healthy; in third mo. of pregnancy.
40	T. Gailard Thomas, *Med. News*, Vol. XL, Nos. 1 and 24.	21 F		Situated in centre, size 8 mos. pregnant uterus.	Perfectly movable.	Large coil in front, but not noticed till operation.					
41	J. S. Little. *Med. News*, Vol. XLIV, p. 399.	4 yrs. R		Several inches beyond median line, abdomen tense and fluctuating, enlarged veins.						Normal.	Considerable ascites, no œdema of ankles, could not walk, otherwise good health.
42	Henry G. Rawdon. *Liverpool Med.-Chir. Journal*, July, 1883.	16 mos. L		Noticed 2 months, slowly increasing until it extended from ribs to ileum and 1 inch beyond median line. Solid, elastic, globular, 2 or 3 prominences of softer consistency.	Somewhat movable	Cross'd by colon and not adherent to it.	No.			No blood or albumen.	
43	S. W. Gross. *Med. News*, June 9, 1883.	59 F		Three mos. ago, small tumor in anterior lower part, then size of child's head, firm, nodular.	Mobile.	No intestine in front.	Several times in 2 months.	None at first, then in loin, increas'g wi. growth.		Only blood corpuscles.	Good general condition, somewhat sallow.
44	Jacobi. *Med. Record*, May 1, 1880.	4		Large, solid.							Good to end.
45	Porter. *Med. Record*, '82. Vol. XXII, p. 48.	25 F L		First symptoms 4 months ago.							Œdema left leg.
46	James E. Adams. *London Lancet*, 1883.	39 M R		None externally.			Intermit't for 2 yrs., latterly profuse.	In right loin.		Blood, pus, triple phosphates, epithelium.	
47	Jacobi. *Med. Record*, 1881. Vol. XIX, p. 217	53 M L		Swelling left renal region.				Ren'l colic sev. years, Renal region tender.		Pus, clear after operation.	Rigors, temp. 103° F., dyspnœa, dulness left upper thorax, improvement, distressing cough.
48	Frank H. Rowe. *Am. Jour. Obstet.*, Vol. XIV, p. 484.	6 F R	Sleeping in newly painted room. No heredity.	After some time rapid tumor, first hard then very fluctuating, lobule in front, feeling like kidney, liver pushed forward. Enlarged veins on abdomen.	Fixed.	Not noticed during life.	1st attack a few hrs. after pain. Frequent & severe, with much tenesmus.	B'lly-ache 1st sympt. almost immediately. Tumor not painful; vesical tenesmus.	App. and bowels norm'l, defecation painful, crav'g for sulphur.	Album, and blood; no cancerous masses; no uræmia; clots size of little finger.	Anæmic, sallow, some jaundice, great emaciation, œdema of legs, no fever.
49	Paul. *Brit. Med. Jour.*, April 19, 1884.	1 yr. L		Yes.							
50	John Homans. *Bost. Med. & Sur. Jour.*, Vol. CX, p. 73. Jan., 1884.	29 M L	Heavy lifting 2 years ago.	Tumor feeling like hypertrophied spleen, but projecting also into region of kidney; began 15 mos. ago.	Freely movable during respira't'n; falls on right side wh. p't turns on it.	Colon cut during operation.	For 2 yrs. from time to time; sometimes long clots.	In b'k wh. jumps or stumbles.	Appetite variable.	No pus, no stone, blood casts from tubules, ureter, and perhaps urethra	Emaciated, weak.

MALIGNANT DISEASE OF THE KIDNEYS.

				PATHOLOGY.					
				DISEASED KIDNEY.					
Diagnosis	Operation.	Result.	Duration.	General Appearance.	Variety.	Size.	Adhesions.	Secondary Deposits.	Other Kidney.
Cyst of kidney or ureter.	Lumbar incision. Evacuated 16 oz. dusky fluid; no calculus; removed kidney; ligated artery, vein and ureter separately.	Discharged in 2 mos.; 3 days later died of recurrence in liver.				7x2½ inches.			
Probably malignant kidney.		Death from asthenia.	6 mos.	Brain-like with clots; perforated capsule; thrombus right iliac artery; inf. vena cava obliterated; ureter obliterated; trace of kidney at lower part of right border.	Round cells, little stroma, firm strands.		Cæcum and omentum.		
		Fatal.							
Ovarian tumor.	Abdominal section. Strictly antiseptic; ligature in mass slipped, almost causing fatal hæmorrhage; clamp, ureter tied separate.	Abortion in 12 hours; septic endometritis; recovery in 8 months.	1 year	Tumor size of child's head, bluish, crossed by large veins, soft after op.; firm capsule continuous with that of kidney, latter quite healthy; tumor prob'y dev'd in capsule.	Angio-sarcoma.				
Ovarian tumor.	Abdominal section for ovarian tumor, but found intestine in front; ligated pedicle in mass and dropped.	Consider'b'e dropsy for time, but finally recovered.			Fibro-cystic.	10½ lbs. after removing 6 lbs. fluid.	Everywhere		
Hydronephrosis.	Aspirated 8 oz. dark-red fluid, containing only blood-corpuscles; exploratory incision for hydronephrosis; removed 2 qts. fluid from cyst; extirpated kidney; strictly antiseptic.	Died in 1½ hours, from shock.	Supposed from birth.	Tumor 6 in. in diam., surrounded by firm capsule, containing large cyst.	Round-celled sarcoma.	6 in. in diam.			
	Abdominal nephrectomy under antiseptic precautions; vessels and ureter tied separately.	Died in 15 hours, cause obscure.	2 mos.	Solid, elastic, globular tumor, with 2 or 3 softer nodules, extending from rib to ilium; no trace of normal kidney-structure remaining.	Carcinoma with cysts.	16½ oz.	Firmly adherent to descending colon in front.		
Cancer of kidney.	Strictly antiseptic exploratory incision through abd'n; nephrectomy; tied in mass with carbol'zed silk; pulse feeble; removed gall bladder with calculus.	Died in 5 days of peritonitis and anuria.	3 mos.	Tumor firm, but consisting of nodules of unequal consistency.	Medullary carcinoma.	18 oz.		Liver fatty & enlarged.	Healthy.
Sarcoma suspected.		Fatal.	Since birth. (?)	Large, solid tumor.	Sarcoma.				Healthy.
		Fatal.	4 mos.	Tumor in thickened capsule; but little kidney left; pelvis obliterated, except a small part filled with grumous matter; ureter hypertrophied.	Sound connective tissue corpuscles in homogeneous matrix.	3 lbs.	Diaphragm duodenum.	Heart, diaphragm, other kidney, duodenum.	3 seco'dary nodul's
	Exploratory lumbar parallel to ribs; then extirpation; peritoneum opened in loosening adhesions; tied en masse with whipcord; free drainage.	Died in 4 days; plugging left renal vein, effusion both pleuræ.	2 yrs.	Twice size normal kidney.			Peritoneum	Lumbar gl'nds and ribs.	
Pyonephrosis.	Renal region aspirated and pus found; abscess incased and much pus evacuated; drainage.	Death from lobar pneumonia and erysipelas of wound.	Several years	Kidney considerably enlarged, perinephritic abscess behind it.	Cancer.	Several times size of kidney.		Other kidney, omentum, liver.	Carcinomatous to lesser extent.
		Fatal.	14 mo.	Bluish, glistening, fluctuating tumor, like bladder, filled with fluid surrounded by strong fibrous tunic; cerebriform contents which flowed off table; no kidney structure left; colon crossing in front.	Medullary cancer-cells.	11–12 lbs.	All around.	Nodules in liver.	
		Fatal.	6 mos.	Brain-like.	Congen. (?) sarcoma.	6 lbs., body only 10 lbs.			
Probably tumor of kidney, perhaps malignant	Under spray incision in linea semi-lunaris from near ant. sup. spine of ilium thro' costal cartilage, and another at r. angles; cut intestine ½ inch and sewed up; vessels and ureter clamped and then ligated with carbolized silk; drainage through loin.	Died in 51 hours; during that time less than 5vj urine; general peritonitis.		All of kidney degenerated; colon in front.	Cancer.				Normal size.

ANALYTICAL TABLE OF SIXTY CASES OF PRIMARY

No.	By whom and where reported.	Age. Sex. Side.	Cause.	SYMPTOMS. TUMOR.								
					Mobility.	Relation of Intestine.	Hæmaturia.	Pains.	Gastric.	Urine.	General.
51	Brosin. *Arch. path. Anat. & Phys.*, Bd. XCVI. Hft. 3.	3 yrs. L.		Large.							Emaciation.
52	Billroth. *Wiener medic. Wochenschr* Nos. 23, 24, 25.	58 F		Smooth tumor, size of man's head; 5 years.	Immovable.		None.	5 years.		Some alb'n, no formed elements, no casts.	Good, able to work until a year ago.
53	Ibid.	33 M		Yes.							
54	Billroth. *Allgem. Wien. med. Zeitung.* May 13, 1884.	50 M		Scarcely any fluctuation.	Somewhat mov'ble.					Normal.	At first very good, then swelling of legs ascites thrombosis of both femorals, from wh, pat. recovered; fever.
55	Jacobi. *Am. Jour. Obstet.*, Sept., 1884.	2 yrs. R		Fluctuating, crossed by large veins. Separate from liver by resonant strip.		Ascending colon crossed lower segment obliquely on autopsy.					Emaciation, dyspnœa, temporary improvement.
56	G. M. Staples. Published by G. Minges.	3 M L		Five mos. Marked fluctuations.		Colon noticed in beginning, but not cert'n. Soon lost.	None.	None.	Appetite fair.	Normal.	Senile appearance of countenance, cachexia only near end, no fev., weakness.
57	G. Minges.	71 M L		Only last few mos. In loin.		In front.	Frequent copious attacks, necessitating cystotomy.	In loin only last two weeks.	Fair.	Normal. A few worm-shaped clots	Emaciation, cachexia, œdema of legs, chronic eczema for a few mos.
58	G. Minges.	5½ yrs. M L	Fall on fence board with abdomen.	First noticed in 4 weeks. Nodular, fluctuating.	By pressure in loin.	Descending colon in front.	In 2 wks. several slight attacks.	Last mo. severe in abdomen.	Fair.	Pus-globules, numerous epithelia, uric acid, trace of alb.	Emaciation, cachexia only at last, right lower extrem, wasted, temp. 99°.
59	B. McCluer. Published by G. Minges.	8 yrs. F L		Large, veins enlarged, solid, smooth.	None.	Not found by percussion, but after death in front.	None.	Some in left side when tum. distended.	Loss of appetite, disapp'ing constipation.		1st symptom weariness, and appearance of hunchback, temp. improvement, hectic fever.
60	P. J. Morison. Published by G. Minges.	50 F R	Lifting tubs. Sister had cancer of breast.	Six weeks after hæmaturia.	Somewhat, as tumor grew.	In front at autopsy.	Some time after pain.	In loin after lifting tub.	Constipation.	Blood-corpuscles, tube casts, alb'n, broken-down fragments, and a cast from ureter.	Cachexia well marked.

results to recommend the operation in cases of renal sarcoma of children, where at best the temporary relief is but a poor return for the risk, suffering, and perhaps parental anxiety in the case."

However, the opinions differ on this point; for in a case of rapidly growing malignant tumor in a child recently brought before the Society of Charité physicians in Berlin, Henoch and Langenbuch advised operation, while Hahn and Güterbock opposed it.[1] The operations in children have been too few to allow of definite conclusions.

There are two methods of performing nephrectomy; one by lumbar incision, the other abdominal, and each of these methods has again been modified. The abdominal incision may be made in the linea alba, as preferred by Spencer Wells, or by Langenbuch's incision in the linea semilunaris, the operation always preferred by Thornton, who says that it is just as free from danger as the lumbar when antiseptic precautions are used, and as a proof of his assertion has operated on 10 cases for all kinds of disease, and always successfully. When the abdominal section must be resorted to, as in case of large tumors, Langenbuch's incision is probably to be preferred, because the vessels are more readily reached, and the intestines are less likely to slough from interference with their circulation. In the abdominal operation it seems advisable to follow the suggestion of Spencer Wells, viz.: to sew up the posterior incision in the peritoneum, and the suggestion of Brichetti and Barwell, to drain the large retro-peritoneal cavity through the loin, as very troublesome abscesses are otherwise very liable to form in that situation, and the danger from septic absorption is great.

The lumbar operation seems to be the better one, as it has given far better results than the abdominal, the formed saving 4 cases out of 7, the latter but 4 out of 19, as shown by Homans' table.[1] It is possible, however, that this difference is due to the fact that all very large tumors can only be removed

[1] Berlin klin. Wochenschrift, 1884.

[1] Homans, loc. cit.

MALIGNANT DISEASE OF THE KIDNEYS.

				PATHOLOGY.					
				DISEASED KIDNEY.					
Diagnosis	Operation.	Result.	Duration.	General Appearance.	Variety.	Size.	Adhesions.	Secondary Deposits.	Other Kidney.
			2 yrs.		Sarcoma,				
Retro-peritoneal fibroid of uterus or ovary which had separated.	Abdominal section; did not know connection of tumor until had cut it off; severe hæmorrhage; compressing forceps, ligation, thermo-cautery; two drains through abdomen.	Living after over a year.	5 yrs.	Smooth tumor size of a man's head, covered with dilated veins; pelvis somewhat dilated.	Myxo-sarcoma,	Man's head.			
	Lumbar nephrectomy.	Recovery.			Interstitial papilloma, Malignant.	3 fists.			
Probably renal tumor.	Billroth first refused operation, as general condit'n was too good; after patient recovered from thrombosis, nephrectomy.	Doing well 2 days after operation.							
	Aspirated decompo'd bloody fluid from tumor; aspirated 3 ss bloody serum from pleural cavity and relieved dyspnœa; pleuritic effusion did not return.	Fatal.		Encapsulated tumor filling almost whole abdomen, firm, soft in places, some nodules almost diffluent, containing ss ropy fluid; ascending colon crossed lower segment obliquely; remainder of kidney compressed; calyces distorted; ureter dilated.	Round-celled sarcoma,	25x15x12 cm.	Firmly above liver, slightly to parietes.		Normal.
Enlarged spleen, Hydronephrosis.	Aspirated few drops of blood.	Fatal.	5 mos.	Soft, fluctuating tumor, imitating cyst, containing brain-like matter; colon in front.	Encephaloid.	Est. 12 lbs.	To colon in front.	Numerous nodules in liver.	Enlarg'd.
Non-malignant disease of kidney or bladder.	Cystotomy; kept wound dilated for about 6 mos., then allowed to heal.	Died suddenly.	6-7 years	Encephaloid in firm capsule; ureter previous.	Encephaloid.	2 fists.	None.	None in abdomen.	Enlarg'd.
Cancer of kidney.	Aspirated few drops of brain-like mass in muco-purulent fluid, showing only pus-cells and detritus.	Fatal.	3 mos.	Encephaloid in firm capsule; pelvis dilated and degenerated.	Encephaloid, apparently beginning in tubules.	6 lbs.	Viscera and parietes.	Nodules in liver.	Enlarg'd.
Cancer of kidney.	Aspirated o ss straw-colored fluid.	Fatal.	About 1 year	Brain-like matter, and clots in dense capsule; most of kidney remaining, but compressed, ureter normal.				None in abdomen.	Enlarg'd.
Renal disease, ovarian tumor by consultant		Fatal.	4 mos. after hæmaturia.		Cancer.	4 lbs.	Colon.	None observed	S'mewh't enlarged.

by the abdominal operation, thus justifying the sensible admonition of Weir, that large tumors should not be extirpated, on account of the great and disproportionate mortality following their removal.[1] Bruntzel, however, successfully removed a fibroid kidney weighing 37¼ lbs. from a patient æt. 33 years.[2] The old lumbar incision is made along the edge of the quadratus lumborum muscle, about three inches from the spinal column and parallel to it, from the last rib to the crest of the ilium. To gain more room, Czerny has modified this incision, as described by him before the International Medical Congress in London in 1881. He makes a transverse incision from the edge of the quadratus lumborum, just below the border of the ribs, extending forward five or six inches. For larger tumors he makes the incision from the edge of the muscle downward and forward to two finger-breadths above the iliac crest, and thence extends it forwards as far as may be necessary, even as far as the spermatic cord. In this way he invariably strikes the reflection of the peritoneum.

On reaching the kidney, if the organ be very much diseased, the operator should proceed cautiously to peel it out all around before going into the depth after the renal vessels and ureter, which may be tied *en masse* or separately. The ligature to the vessels must be tied very firmly; if it should slip, the patient can only be saved by *immediately* seizing the artery with a reliable forceps and retying. It is advisable to make a groove in the stump with forcipressure forceps before tying, and care should be taken not to cut too close to the ligature. It is important to have good drainage, as an amount of sepsis readily eliminated by two kidneys may fatally embarrass one organ, perhaps also more or less diseased. The different layers of muscles are sewed up separately.

In all these operations there is great danger of hæmorrhage, either by slipping of the ligature from the renal artery, by tearing a friable kidney or abscess, or by dividing enlarged veins ramifying over the tumor.

[1] Weir. Loc. cit.
[2] Berlin klin. Wochenschrift, December 4, 1882.

In several cases the hæmorrhage was frightful. Hueter's case,[1] for example, dying on the table from hæmorrhage from the renal vessels. In one of Prof. Czerny's cases[2] the hæmorrhage from laceration of the tumor was so great as to necessitate ligation of the aorta, and death occurred in ten hours.

Most operators are in favor of strict antiseptic precautions, and this seems to me another argument in favor of the lumbar operation, as carbolic acid poisoning is very liable to occur from the peritoneal exposure, and the absorption of a small amount may prove very serious to the remaining kidney, perhaps already seriously embarrassed by vicariously performing the function of the extirpated organ.

Knowsley Thornton ties the bladder end of the ureter and pins it outside the abdominal wound, cleansing it with tincture of iodine, and packing around it absorbent cotton moistened in the same fluid. He does this to prevent regurgitation of urine and septic material into the peritoneal cavity; for in one case in which he dropped the ureter, it sloughed, but was finally discharged through the wound and patient recovered. Other details will be found in a very able paper on "Hydronephrosis" by my friend, Dr. G. A. Staples, of Dubuque.[3]

Before proceeding to operate, we should endeavor to determine the soundness of the other kidney, for Polk has extirpated the kidney in a case where there was but one, and Lange removed the sounder of two kidneys, the other being entirely degenerated. To obtain the urine from one kidney various means have been devised to compress the ureter of the opposite side. Polk has invented a clamp for that purpose; Davy's rectal rod can be used for the same purpose; Sands advises compression of the ureter with the hand in the rectum; Silbermann introduces small bags through a catheter and afterward fills them with mercury to accomplish the same end. I am indebted for these suggestions to the recent very valuable paper of Dr. Weir[4]

Even in successful cases of nephrectomy, marked diminution of urine or complete anuria is apt to exist for some time after operation; but the hypertrophied kidney of the opposite side soon takes upon itself the task of acting for two. James R. Chadwick,[5] who operated on a retro-renal sarcoma, and in whose case this temporary diminution of urinary excretion likewise occurred, thinks that it is caused by shock. He kept his patient for some time before the operation on acetate of potash to increase the quantity of urine, and on a strict milk diet to diminish the excretion of urea.

From the foregoing remarks it will be seen that the results after nephrectomy for malignant disease, although still very unsatisfactory, are becoming more favorable; and it is highly probable that, as we become more adept in making an early diagnosis, aided, if need be, by exploratory incision under antiseptic precautions (which has been done by Billroth 27 times without harm to examine gastric carcinomata), the operation may become divested of many of its dangers, and becoming universally recognized in the treatment of properly selected cases, add another triumph to *true* conservative surgery, whose noble aim is to conserve human life.

[1] Case 5 of Homans' table. Deutsche Zeitsch. f. Chirurgie, Bd. IX, p. 572.
[2] Case 10 of Homans' table. Centralbl. f. Chirurgie, No. XLV, 1879.
[3] Journ. of Am. Med. Assoc., April 12 and 19, 1884.
[4] Loc. cit.
[5] Boston Med. and Surgical Journal, October 23, 1884.

MEDICAL PROGRESS.

ANATOMY AND PHYSIOLOGY.

THE CHOLERA-BACILLUS.—The following is an abstract of MR. W. WATSON CHEYNE'S report to the Scientific Grants Committee of the British Medical Association on *The Cholera-Bacillus:* In view of the great importance of the etiology of cholera, I have, for some months past, been engaged in observations on that subject; and, during the epidemic of Asiatic cholera in Paris, I went over there, and made some investigations on the bacteria present in the dejecta. The present paper gives the results of those investigations; and to the report of my work, and the conclusions at which I have arrived, I have added an appendix, in which reference will be made to the observations of others, more especially to those of the English Commission.

In the study of every disease supposed to be caused by bacteria, three distinct lines of investigation must be followed. In the first place, the seat of the disease (blood, tissues, etc.) must be thoroughly investigated, with the view of discovering what organisms are constantly present; the characters of these microorganisms must be studied, not only their microscopical characters, but also their behavior on cultivation in various media; and the bacteria must also be separated by cultivation from other morbid products. In the second place, it must be determined whether the bacteria that are constantly present are ever found in other diseases of the same species of animal, or under circumstances in which they probably ought, if they are the true cause, to have produced the disease, and have not done so. And, in the third place, it must be ascertained, by experiment on suitable animals, whether the organism so studied can reproduce the original disease.

In two very important respects, cholera presents differences from most of the diseases which have as yet been investigated, and found to be dependent for their origin on certain bacteria. In the first place, in most of the diseases referred to, the cause is situated in the blood or tissues, and we have only one particular form of bacterium present, which is easily isolated and studied. In the case of cholera, the cause is apparently situated in the intestinal canal; and, if there is any blood-affection at all, and there seems great reason to believe that there is, it is probably due to the presence of a chemical poison produced by this cause. Now, in the intestinal canal, there are normally large numbers of bacteria of different kinds; and one must, therefore, find great difficulty in the first instance in picking out the organism specially associated with the disease. In the second place, cholera apparently only attacks man; and

therefore it is almost impossible to verify, by actual experiment, whether the particular organism fixed upon is, or is not, causally connected with the malady. However, we now know such a large number of bacteric diseases, that, even without this last proof, we are warranted by analogy in coming to a conclusion as to the causal or non-causal connection between cholera and any particular organism. In every case, where a definite form of organism has been discovered, in large numbers, in the diseased parts of an animal, and where this organism has never been found associated with other diseases, or normally present in the same animal, it has been found by experiment to be the cause of the disease. Fortunately, in the case of cholera, it seems as if, under certain circumstances, a somewhat similar affection can be induced in certain animals, and thus the foregoing difficulty is much diminished.

Now, the following seems to me to be the line of investigation to follow in the case of cholera, from the bacterial point of view; it is, in fact, practically the line which was followed by Dr. Koch. In the first place, the blood and tissues would be carefully searched for bacteria, but attention would be more especially paid to the contents of the intestine. In every case examined, all the different forms of microorganisms present in the evacuations would be carefully separated and studied. This would be done in a large number of cases, and then those forms only occasionally present would be rejected, and attention directed to those constantly present. If there were more than one of these, an important point would be to note which were generally present in greatest numbers. Their relation to the tissue of the intestinal wall would also be noted; but this is of only secondary importance. The next point would be to determine which of these were only found in cholera, and which were found in other affections, as simple diarrhœa, dysentery, etc., or under circumstances in which Asiatic cholera was out of the question. Then the effects or these organisms on animals must be studied, and any facts observed which relate to their causal or non-causal connection with cholera. That there are numerous other points to be investigated is, of course, evident to all.

By the mere form, it is quite impossible to distinguish any one variety of bacterium from others of which the form is somewhat similar. Thus, the micrococci are all round bodies, and, except for slight differences in size or grouping—often quite inappreciable—they closely resemble each other; and it would, therefore, be quite impossible to tell one species or variety from another, if the form alone were taken into account. And the same holds good with the bacilli and the spirilla. Indeed, taking into account the great variations in size and form shown by the same organism when grown in different media, it would be rash, and would certainly lead to error, if one attempted to determine the kind in any given case by microscopic appearance alone. Without entering at length into the materials employed in the cultivation of bacteria, I may state at once, what is now an acknowledged fact, that the greatest amount of information is to be derived from cultivation in meat-infusion rendered solid by the addition of gelatine. This material was first introduced with the view of enabling one to carry on pure cultivations of various bacteria, on the principle that, in a solid medium, bacteria can only grow where they fall or are planted, and that thus the presence of accidental contamination could be readily recognized, and the growth which is being studied be transferred to a fresh medium before it has become mixed with the extraneous organisms. It was soon found, however, that various organisms growing on this solid material could be readily distinguished from each other, even by the naked eye, by the form assumed by their colonies, by their effects on the gelatine (liquefaction, etc.), and by other characteristics; and thus, perhaps, the most important use to which this material is now put, is the distinction of different forms of organisms from one another. For this purpose, the gelatine is employed in three different ways.

The first we may call test-tube cultivations. In this method, a certain quantity of the gelatinized material is introduced, while still liquid, into a number of sterilized test-tubes plugged with cotton-wool, and, after the material has been sterilized by repeated boiling, it is allowed to solidify with the test-tube in a vertical position, and kept for a few days to see if it be pure. A long, fine platinum wire, stuck into the end of a glass rod, is sterilized by heat, and dipped into the material containing the pure cultivation of the organism. The cotton-wool plug being removed, with various precautions to prevent the access of dust into the tube, the infected wire is plunged into the jelly down to the bottom of the tube. It is then rapidly withdrawn, the wool plug is reinserted, and the tube placed at a suitable temperature. By the appearance of the growth, both on the surface of the jelly and along the tract of the wire, and by its effects on the jelly, much information may be derived as to the species under observation. Thus, one organism may grow both on the surface of the jelly and along the needle-tract; another, though microscopically similar, may grow along the tract of the wire, and not on the surface; a third may liquefy the gelatine, and so forth.

The second method we may term slide-cultivations. Here a number of ordinary 3 by 1 microscopic slides are sterilized by heat, placed on a series of glass trays, in a dish containing moist blotting-paper, and covered by a bell-jar. On these slides some liquefied jelly is poured, and allowed to solidify. The wire, charged as before, is then rapidly drawn over several parts of the surface of the jelly. Bacteria are thus sown at various points along the tracts, and, growing there, produce colonies, the appearance of which can be studied under the microscope with a low power.

The third method, which may be called glass plate cultivations, is that which is also used for the examination of water, and for the separation of different forms of bacteria from one another. In this method, a minute quantity of the material containing bacteria is introduced into a tube of jelly, rendered liquid by keeping it for a few minutes at the body temperature. The liquid jelly is then well shaken, so as to diffuse the bacteria throughout it, and is poured out on ster-

ilized glass plates kept in a dish, arranged as for the last method. The jelly solidifies, and the bacteria, having been caught in various parts, grow there and form colonies, which may be readily recognized under the microscope with a low power. This mode of growth in colonies on glass plates is one of the best means of distinguishing different species of bacteria from one another. The exact form and size of the colonies depends to a considerable extent on the amount of gelatine used, although the general type remains the same. Hence 10 per cent. of gelatine is now always employed, in order to secure uniform results. Further information as to difference in kind may in many cases be obtained by growing the organisms on the cut surface of cooked potatoes, in milk, in meat-infusion, etc. And then, again, by inoculation of animals, different results will be obtained with different bacteria. Hence, in coming to a conclusion as to the nature of any given bacterium, its various characteristics, its form, its mode of growth, and its effects on animals, must be taken into consideration. Reliance on mere form alone, or, indeed, on any single characteristic, is not in any case satisfactory, and will in all probability lead to error. In the case of Koch's cholera-bacillus this is especially important, as a number of bacilli are now known which resemble it very closely in microscopic appearances. Hence, when the cholera-bacillus is spoken of, an organism is meant which, along with certain morphological characters, presents also certain peculiarities on cultivation on various materials.

(After sending tubes of his cultivation to Dr. Koch, and receiving his assurance that they were cultivations of his cholera-bacillus, and that they were *pure* cultivations, he commenced his work.)

The cholera-bacillus varies very much in form, according to the conditions under which it is growing; but the general type is that of a short rod somewhat curved. I cannot describe it better than has been done by Dr. Koch, who says that it is at most about two-thirds the length of the tubercle-bacillus, and curved, the curve being commonly about that of a comma. The degree of curvature, and the length and thickness of the organism, vary, however, very much, as I have just said, with conditions under which it is grown. The forms which it assumes, when it grows rapidly, may be readily studied in the following manner. A number of slides, with small depressions or cells hollowed out in their centre, are placed in beakers plugged with cotton-wool, and sterilised in an iron box raised for three hours to the temperature of 300° Fahr. When they are cool, a little vaseline is brushed round the margin of the cell, and the slides are laid on a sterilised glass plate, and protected from dust by a glass shade. A similar number of cover-glasses are cleaned and sterilised by passing them several times through the flame of a Bunsen burner, and placed on a pure glass plate under another shade. By means of a purified syringe, to the end of which is attached a narrow bent glass tube, a minute quantity (about one-third of a minim) pure infusion of meat, neutralised, and containing 3 per cent of peptone, is placed on the centre of each of these cover-glasses. Each drop is then inoculated from a pure cultivation of cholera-bacilli. (The purity of the cultivation is easily ascertained by making glass-plate cultivations in nutrient jelly at the same time, as formerly described; and this, of course, ought always to be done.) The cover-glasses are now seized in purified forceps, inverted and placed over the cell on the slides, the edge of the cover-glass being pressed down so as to diffuse the vaseline all round. Care must be taken not to use too much vaseline, otherwise it may run over the glass and become mixed with the cultivating fluid. With a little practice, one can easily manage to have the infected drop hanging from the middle of the cover-glass without any admixture with the vaseline. These slides are now placed in an incubator, kept at the temperature of the human body. After the lapse, say of an hour, one is removed, the cover-glass lifted off, inverted, placed on the top of the incubator under a glass shade, and dried rapidly. When dry, it is passed through the gass-flame three times, to fix the layer to the glass, and to render the albuminoid materials insoluble in water, and it is then stained in a suitable solution (fuchsin, methyl-violet, etc). After staining, it is washed in water, or, after the methyl-violet, in weak acetic acid, dried thoroughly, and mounted in Canada-balsam. By removing slides at intervals of half an hour to an hour, and preparing the cover-glasses in the manner described, a beautiful series of permanent preparations, illustrating the mode of growth, may be obtained and studied at leisure. To get a regular series, showing the successive stages of growth, the same amount of fluid and the same number of bacilli must be placed on each cover-glass. This is readily managed by inoculating, in the first instance, the flask of meat-infusion with the bacilli, and then placing it in an incubator for two or three hours. The bacilli grow and diffuse themselves through the liquid. Before use, this liquid is well shaken and by means of a finely graduated syringe, the same quantity of fluid, and hence probably the same number of bacilli, is placed on each cover-glass. —*British Medical Journal*, April 25 and May 2, 1885.

(To be continued.)

MATERIA MEDICA AND THERAPEUTICS.

A MUSTARD-SPONGE.—In referring to sponge as a carrier of poultices, DR. RICHARDSON considers that it makes the best of mustard carriers. The nurse mixes the mustard in a basin with water until the mass is smooth and of even consistency. Then she takes the soft mass all up with a clean sponge, lays the sponge in the centre of a soft white handkerchief, ties up the corners of the handkerchief neatly to form a hold, and applies the smooth convex surface to the skin. This mustard sponge, warmed again by the fire and slightly moistened, can be applied three or four times, is good for several hours, and saves the trouble of making a new poultice for reapplication, often a matter of importance during the weariness of night watching. The sponge can afterward easily be washed clean in warm water. It is scarcely necessary to add that this method will save both time and trouble, and that the same sponge may be used frequently.

THE
Journal of the American Medical Association.
PUBLISHED WEEKLY.

THE EDITOR of this JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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Address
JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 65 RANDOLPH STREET,
CHICAGO, ILLINOIS.

SATURDAY, JUNE 13, 1885.

THE COMMITTEE ON THE INTERNATIONAL MEDICAL CONGRESS.

Since our last issue, we learn that the officers of the original committee appointed at Washington have called a meeting of the general committee, as organized previous to the meeting of the American Medical Association in New Orleans, to be held in Washington during the month of September next, for further conference in regard to the organization of the International Congress of 1887. Instead of inviting the additional members appointed at New Orleans to meet with them as a part of the same committee, they are simply notified of the time and place of meeting, that they may meet as a separate committee at the same time if they choose. Such a course is in no respect in accordance with the action of the Association in New Orleans, and it is difficult to see how any good can be accomplished by it. Moreover, the delay until September is in strange contrast with the activity displayed by the same parties in pushing the work of organization heretofore.

On account of this practical refusal to promptly invite the newly-added members to meet as a part of the general committee, we are assured that those members will agree among themselves on a place and time for a much earlier meeting. If they do, we hope they will not fail to cordially invite each of the eight members appointed at Washington, to attend with them as regular members of the committee according to the plain terms of the first resolution adopted by the Association in New Orleans, and thereby leave no excuse on their part for a failure to have a full meeting of the committee as re-constructed by the American Medical Association at its last meeting.

THE CHOLERA-BACILLUS.

In the numbers of the *British Medical Journal* for April 25, May 2, 9, 16, and 23, is to be found MR. W. WATSON CHEYNE'S "Report on the Cholera-Bacillus," a report submitted to the Scientific Grants Committee of the British Medical Association. From a careful study of this report it seems that it is the most thorough article on the subject that has yet appeared, with the exception, perhaps, of Koch's first report at the Berlin Cholera Conference in 1884. Indeed, in some respects it is much more thorough than that report. In making his experiments, he has followed out the line of investigation pursued by Koch as closely as possible. On account of the length of Mr. Cheyne's report it will be impossible to do more than summarize the principal points in this place. In another column, however, we present as full an abstract of his paper as space will permit.

It will be remembered that Koch stated that certain acids, particularly mineral acids, when present in the cultivating materials in small quantities, prevent the development of the bacilli; and that the bacilli are killed in the stomach. These statements as to the behavior of the bacilli in the presence of an acid were fully confirmed by Mr. Cheyne by direct and control experiments. Six experiments were made with a two per cent. solution of hydrochloric acid (the quantity normally present in the stomach), and with artificial gastric juice. With the first there was no development of colonies after 9 min. 56 sec.; with the second there was no development after 9 min. 25 sec. It may be said, therefore, that the bacilli cannot live more than ten minutes either in a two per cent. solution of the normal acid of the gastric juice, or in the gastric juice itself. It is thus seen that the experiment of ingesting a quantity of matter containing cholera bacilli into the stomach is utterly valueless as a proof that the bacilli are in no way connected with cholera.

Is the cholera-bacillus of Koch peculiar to Asiatic cholera? To this question Mr. Cheyne replies: it must be evident that, as it is the almost unanimous statement of various observers that this organism is always present in Asiatic cholera, it follows that, unless it be peculiar to this disease, it should be widely distributed throughout the world, and should, therefore, be readily found. Mr. Cheyne has failed to find it except in cases of Asiatic cholera. He points out that there are other comma-shaped bacilli than those found in Asiatic cholera, but shows in the most conclusive manner that they behave very differently under cultivation. He shows further that microscopic examination is of no value whatever in deciding the

differences between these comma-shaped bacilli; it is absolutely indispensable that culture tests be employed. It is in connection with this question that Mr. Cheyne commences to speak somewhat freely concerning Klein's criticisms of Koch, and still more freely of the numerous sources of error in Klein's experiments; and he shows quite clearly that Klein's experiments were faulty in a great many respects—so faulty that no conclusions whatever can be drawn from them.

As regards experiments on animals with cultivations of the cholera-bacilli, Mr. Cheyne says: "In two instances, guinea pigs died undoubtedly as the result of the growth of the cholera-bacilli in their intestines; they certainly did not die of septicæmia. I have given a drawing of bodies which were found in the large intestines of these animals, along with other bacteria, both curved and straight. I think it most probable that these bodies are the cholera-bacilli, which were found, on cultivation, to be present in enormous numbers, because there were no other markedly curved organisms present, and because they seemed to show all gradations between small slightly curved rods, and the large coiled bodies shown (in a drawing). It is, however, only right to say that the gentleman who made the drawings for me thought that these bodies were minute entozoa, but this view did not seem to me probable. The microscopic appearance is, however, of no consequence; the essential fact being that, on cultivation, I found that almost all the colonies which developed on the plates were colonies of cholera-bacilli; showing that they were present in the intestine in enormous numbers. I should also state that I have made cultivations from the intestinal contents, and from the dejecta, of healthy guinea pigs, and have never found cholera-bacilli. . . . . As regards mice, in two instances death occurred in a few hours after subcutaneous injection of a cultivation, as the result, apparently, of absorption of a chemical poison from the material injected; and in one instance, the cholera-bacilli grew in the blood of the animal, passed into the intestine, and killed the animal."

The question now arises as to the diagnostic value of the cholera-bacillus. Apart from any causal connection that it may have to Asiatic cholera, it must be seen that the discovery is of the utmost importance as a means of diagnosis; for it seems to be constantly present in the disease. The confirmatory evidence that it is always found in cases of Asiatic cholera is exceedingly strong; and when it is remembered that it has never been found in any other disease, it becomes still stronger. Mr. Cheyne says: "As I have pointed out, various organisms with somewhat similar morphological characteristics have lately been described, but accurate examination has shown that these are different from the cholera-bacillus, and can be readily distinguished from it. Hence the converse of these propositions necessarily follows, namely; that if the cholera-bacillus be found in dejecta, these dejecta must have come from a patient suffering from Asiatic cholera; in other words, the presence of this bacillus may be used as a means of diagnosing Asiatic cholera." He again points out that for diagnostic purposes the microscope is useless, except for recognizing the forms after cultivation; culture experiments must be performed. "In any suspicious case, the patient can be isolated, his dejecta thoroughly disinfected, and all the necessary precautionary measures adopted, while, in the meantime, it is being ascertained whether or not it is a case of true Asiatic cholera. Thirty-six to forty-eight hours would suffice for this purpose; because, in thirty-six hours, the colonies on the glass plates are visible under a low power of the microscope, and their characteristics can be studied. I venture to think that, if Koch's work on cholera leads to nothing more than this, it is an achievement for which he deserves the very highest praise" He mentions the fact that the importance of this matter has been appreciated by the German government, and that medical men from various parts of Germany have recently received instructions from Koch in the methods of cultivating and distinguishing the cholera-bacillus, so that they are now able to ascertain at once, with regard to any suspicious case, whether or not it be a case of Asiatic cholera. His remark, "surely some steps ought to be taken in this country to enable our medical officers of health to acquire like information," is also lamentably applicable to our own country.

Mr. Cheyne concludes his report with the following significant words: "Dr. Koch's facts remain now as correct as when he first published them. He said that this organism was constantly present in Asiatic cholera, and that it was present nowhere else. These statements have now been amply confirmed; and it is perhaps the most striking evidence in favor of the precision of Dr. Koch's methods, and of the care which he has devoted to the subject, that, although other bacilli, of somewhat similar appearance, have since been discovered, yet, by the use of his methods, it has been found easy to distinguish them from one another, and from the cholera organism." These words from so careful an observer as Mr. Cheyne are full of import, and outweigh any amount of evidence

from careless observers. We learn with pleasure from his article that Dr. Koch will soon publish another very important paper on this question, giving particular attention to the subject of experiments on animals with bacilli cultivations.

FOR NEW MEMBERS OF THE ASSOCIATION.

It should be remembered by all members of the American Medical Association, that the office of publication here is dependent upon the Treasurer of the Association, for the names and address of all members who are entitled to receive the JOURNAL on account of their membership. No one but the Treasurer has the record of the annual payment of dues, whether at the annual meetings or in the interval between such meetings. Those who become members by proper application to the Treasurer at any season of the year, usually have their names transmitted to us within a few days, and we commence sending them the JOURNAL immediately. But at each annual meeting of the Association, there are from two to four hundred names registered as new members, and they are indiscriminately interspersed with the names of several hundred old members. Consequently, it takes a little time after each annual meeting for the Treasurer and Secretary to separate accurately the names and address of the new members, and forward them to this office. It was only last week that we received the list of those who became members for the first time at the recent meeting in New Orleans, and they were all supplied with the issue of the JOURNAL for June 6th; although their journal-year, does not begin until the first issue in July, which will be number one of volume five. For it should also be remembered, by all interested, that the journal-year commences with the first week in July, and ends with the last week in June, during which each member receives two complete volumes; each accompanied by a title page and full index.

As the annual meetings of the Association vary in time, from the first week in May to the first in June, those who pay the regular membership fee at such meetings, do so from one to two months before the beginning of the journal-year, for which they pay. For example, those who paid their dues at the meeting in Cleveland, in June, 1883, and subsequently for that year, received the JOURNAL from the first of July 1883, to the last of June 1884, embracing volumes one and two complete. Those who paid their dues in Washington in May, 1884, and subsequently for that year, were entitled to the JOURNAL from July 1st, 1884, to June 30th, 1885, embracing volumes three and four complete. In like manner, those who paid their dues at the meeting in New Orleans, in May, 1885, and subsequently for that year, are entitled to, and will receive the JOURNAL from July 1st, 1885, to June 30th, 1886, embracing volumes five and six. But as the new members who are added at each annual meeting rarely have these facts clearly in mind, and are apt to become impatient, if they do not begin to receive the JOURNAL very soon after they become members, we have made it a rule to commence supplying them as soon as we receive their names from the Treasurer. They thereby receive from four to six of the last numbers of the current incomplete volume, gratuitously, before the commencement of their own journal-year.

In the past year, some of those who received the last few numbers of the unfinished volume, desired to complete it, by obtaining all back to the first of January, and paying for the additional half-year, $2.50. We could accommodate a limited number in the same way this year, if it should be desired. Subscribers who are not members of the Association can commence taking the JOURNAL at any time they choose; but if they desire complete volumes, they should make their subscriptions commence either on the 1st of July, or the 1st of January.

DEATH OF DR. WILLIAM T. WRAGG, OF CHARLESTON, S. CAROLINA.

We learn from a recent number of the *News and Courier*, of Charleston, that the funeral of DR. WILLIAM T. WRAGG, one of the oldest and most respected of the physicians of that city, took place on the 1st day of the present month, June 1st, 1885. We have not only known Dr. Wragg by reputation as a prominent and active practitioner, a contributor to medical literature, and an enlightened citizen, but we enjoyed the cordial hospitality of himself and family during the week that the Amercan Medical Association held its annual meeting in that city, in May, 1851. Hence the news of his death brought more than the usual feeling of sadness, accompanying the departure of one of the older and more honorable members of our profession; it left rather the impress, that a personal friend and brother had given us the last farewell.

NITRITE OF AMYL IN GOUT.

DR. ARCHIBALD D. MACDONALD, of Liverpool, raises a very important question in the *British Medical Journal*, of May 23, as to the elimination of uric acid by nitrite of amyl. On three occasions he has noticed that the administration of nitrite of amyl markedly increased the acidity of the urine, and

caused a deposit of uric acid crystals. The first case was one of puerperal eclampsia, in which the drug was given to control the convulsions; the second was a control experiment, in which the administration of the drug caused a marked increase of the uric acid in the urine of a healthy man; and the third was one of gout, which was much benefitted by three administrations, and with the result that the uric acid was very much increased.

The three cases recorded by Dr. Macdonald are sufficient basis for some careful physiological work, in which to investigate the action of nitrite of amyl on the elimination of uric acid, and for further clinical experimentation as to its true value in cases of gout. In his case the drug was administered in four minim doses, by inhalation, at 4, 6, 8 and 10 P. M., the result being as recorded on the next morning.

SOCIETY PROCEEDINGS.

OHIO STATE MEDICAL SOCIETY.

Fortieth Annual Session, held at Dayton, June 3d, 4th, and 5th, 1885.

WEDNESDAY, JUNE 3D, FIRST DAY.

The Session was opened with prayer, by REV. MR. HALE.

DR. W. J. CONKLIN, President of the Montgomery County Medical Society, delivered the

ADDRESS OF WELCOME.

He asked the members to beware of medical politics, and not allow it to push out scientific papers as had been the case on a former occasion.

DR. J. M. WEAVER, Chairman of the Committee of Arrangements, informed the Society that every object of interest in about the city, among them the Insane Asylum and the National Soldiers Home, was thrown open to them.

The SECRETARY reported a membership of 567, also that Dr. J. P. Thompson, who had recently died in his 83d year, donated his set of reports to the Society. This is the only complete set of reports in existence, and it has long been the desire of the Society to secure such a set.

DR. J. F. BALDWIN, Chairman of the Special Committee, to secure the passage of a

STATE BOARD OF MEDICAL EXAMINERS'

Bill, reported no progress. He enumerated three Society Medical Colleges and journals who had opposed the Bill, but thought the most potent factor against it was the physicians in the House of Representatives. The measure was defeated by two or three votes in the Senate. The Committee recommended that in the future the Society endeavor to prevent the election of physicians to the Legislature.

The report from the Committee on the

COLLECTIVE INVESTIGATION OF DISEASE

asked a more representative committee to be appointed; one member was added from each county.

DR. HERRICK, Chairman of the Committee on Legislation, reported that no

BILLS RESTRICTING THE PRACTICE OF MEDICINE

would be entertained by the Legislature; hence we must confine our requests to the improvement of sanitation.

DR. C. A. L. Reed, of Hamilton, read a paper on

PELVIC HÆMATOCELE.

He thought there was a great deal of fiction in the common remark, there is no danger from the puncture of a trocar. He favored the evacuation of the coagula early. After discussing the sublect from its various bearings and reporting several cases, he closed with the following conclusions:

1. The demands of science and humanity call for some means of controlling the initial hemorrhage in these cases.

2. The operation by incision along Poupart's ligament and the elevation of the peritoneum is a valuable proceedure in cases in which the accumulation lies beneath the broad ligament.

DR. MILLER, of Cleveland, thought the incision should be made at that point where the best drainage could be obtained. The history of these cases is that nature takes care of the majority of them if the extravasation of blood is not too great. He does not believe in either hurrying or delaying the operation. What might be death in one case would be life in another. In some cases no operation should be undertaken at all.

DR. HERRICK did not believe in operating for evacuation.

DR. JOHN CARSON, of Middletown, was in favor of operating early.

DR. REED in closing said: In view of extremely probable septic poisoning and its train of troubles, are we not justified in some simple expedient controlling the initial hemorrhage? This can be done by simple ligation of the vessels which lie beneath the broad ligament. This is not the serious operation it has been pictured here this evening.

DR. C. D. PALMER, of Cincinnati, reported a

RARE COMPLICATION AFTER OVARIOTOMY.

Miss ———, of German descent, a blonde of delicate organization, noticed an abdominal swelling at the age of nineteen, three and half years ago; this swelling was central, regular and uniform. Two physicians whom she consulted pronounced her trouble Bright's disease, and tapped her, after which operation the abdomen collapsed. The fluid again collected, and she applied at one of the hospitals for relief. The same diagnosis was again made, and the same operation performed. Some time afterwards another physician tapped her a third time; and this was repeated until she had been tapped eight times. The last physician to whom she applied, Dr. John Kellar, suspecting the true nature of the trouble, asked the reader of the paper to see the patient with him. The abdomen was found to be immensely distended, and fluctuation distinct, superficial and uniform, with dullness extending backwards to an unusual degree; lateral decubitus showed a slight

change in the area of the dullness. There was no fluctuation in the posterior cul-de-sac. The patient was very anæmic and feeble, with pulse 120—130; febrile movement every evening. She had not menstruated for six months. The lower extremities were swollen and œdematous, but there was no albumen in the urine. The diagnosis of unilocular ovarian cyst was made; but in view of the former diagnosis, and the fact that there were some obscure history and physical signs, an exploratory incision was made, which fully confirmed the second diagnosis. Both the general condition of the patient and the surroundings were very unfavorable for operation. The cyst wall was found closely adherent in all directions to the abdominal parietes. When the adhesions had been broken up as far as possible with the fingers, a large quantity of fluid commenced to flow through the abdominal opening. For the moment this was supposed to be ascitic fluid, and the patient was turned on her side to aid in its evacuation. But the true source from which it came was found to be two lacerated, fringe-like openings into the cyst, which were directly opposite to cicatrices in the abdominal walls, and had been made by the repeated tappings. Through this some of the cystic fluid had doubtless flowed into the peritoneal cavity after some of the tappings, but its edges had been subsequently agglutinated by peritoneal adhesions to the abdominal walls. Two other smaller openings of this kind were found. They were clamped with hæmostatic forceps, and the largest plugged with a large sized ovariotomy trocar, through which the cyst was drained. The cyst was detached from the abdominal walls when it was almost empty. The adhesions were short, thick, firm, numerous, and universal over the whole anterior and laterial abdominal walls, omentum, lower border of the stomach, and to a limited extent over the colon.

The pedicle to the right ovary was transfixed, and cut off about one inch from the seat of ligation, after which a wedge-shaped section was cut out of the fore end and the peritoneal edges were sewed together by a continuous stitch of catgut. This was the author's manner of dealing with the pedicle in his last five ovariotomies, all of which terminated successfully; it possesses advantages against secondary hemorrhage and septic absorption. Oozing was controlled, and the peritoneal cavity cleaned of all fluids. The abdominal cavity was closed with silk sutures without a drainage-tube. Strength was sustained by brandy hypodermically.

The operation left the patient in a very bad condition, but she began immediately to improve. Fearing vomiting, all food was given per rectum. A low form of peritonitis occurred during the first week, attended with tympanites and dyspnœa; pulse, 140; temperature, 103° to 104° F. On the eighth day, a fatal result seeming imminent, two stitches were removed and a rubber tube inserted, removing eight to ten ounces of fetid serum. The temperature fell three degrees in two hours, and all other bad symptoms improved accordingly. Convalescence a few days later seemed established, and recovery seemed certain, when another complication appeared. On the twelfth day a smell of gas with a fecal odor was noticed at the opening made into the abdominal cavity. The next morning a small amount of fecal matter was seen and removed. A fecal fistula had formed. It seemed to communicate inwardly with the lower small intestine, and the external opening presented midway between the umbilicus and symphysis pubis. At first it discharged daily several ounces of fecal matter, and has continued to discharge since in quantities gradually diminishing and less offensive. The present quantity averages daily two or three teaspoonfuls. For two months the recovery has been complete, except for the fecal fistula. It is possible that this may close spontaneously. No treatment for the fistula has been undertaken, except the regulation of the diet and the use of a compress; surgical interference may yet be needful.

The occurrence of this fecal fistula is one of interest and rarity. It is a question how this one appeared. The most reasonable and plausible explanation would be that the intestinal perforation resulted from softening from the peritonitis. The septic fluid remaining would have certainly led to a fatal termination had not the peritoneal cavity been opened when it was. Baker Brown, in "Ovarian Dropsy," gives examples of avenues for the escape of ovarian cystic fluid. Instances of fecal fistula are given by Milner Moore (*The Lancet*, 1880, vol. i, p. 329); Bantock (*The Lancet*, 1879, vol. i, p. 207). Atlee, Peaslee, Simpson, Barnes, Thomas, Emmet, Goodell and Tait make no mention of any case. Spencer Wells mentions three cases, one his own, the only one in his one thousand reported ovariotomies. Mr. Bryant ("Guy's Hospital Reports," vol. xiv, p. 228), Pouchin and Kufferath (*Belgian Med. Press*, 1880, vol. xxxi, p. 217), and Kuswein (*Centralblatt fur Chirurgie*, 1879, p. 630) report cases. It is remarkable that such perforations do not occur more frequently. This may also be said of lacerations of the intestinal tube. The tumor is often adherent to these parts, and separated only with the greatest patience and skill. Bantock and Barnes (*The Lancet*, 1877, vol. ii.)report such cases. Considering the facts, the author asked, is it not possible that lacerations and perforations are more common than is supposed?

Dr. Dunlap, of Springfield, opened the discussion on Dr. Palmer's paper, and reported two cases which had occurred in his practice. In one case the fistula occurred on the 3d week and continued for 6 weeks. The patient made a perfect recovery.

Dr. Dillon, of Cleveland, thought Dr. Palmer's case would recover entirely. He had had one case which opened on the 14th day and remained open 3 months. The patient recovered and married. Both ovaries are in the doctor's office, yet she menstruates regularly.

Dr. Palmer, in closing, said that most of these cases close within one year. Should this case not close would it be advisable to make an operation to close it? This is a most difficult operation, the fistula being surrounded by some very vascular tissue, and the operation has been followed by fatal results. It should not be made unless positively necessary.

THURSDAY, JUNE 4TH, SECOND DAY.

AN AMENDMENT TO THE CONSTITUTION

was offered, allowing physicians to become candidates who are not members of any local society, provided there is no society in the county in which they reside. The argument was brought that there were eighteen counties in the state which contained no local society. The amendment was rejected.

Some discussion on politics was then indulged in, the subject being the bill for

A STATE BOARD OF MEDICAL EXAMINERS,

which was defeated last year by but three votes in the Senate.

DR. FRANKLIN moved that $500 be appropriated to defray the expenses of pushing the bill through. He said money was what was needed, and $500 was the amount. He had been a member of the Legislature, and knew whereof he spoke.

DR. R. HARVEY REED, of Mansfield, read a paper on

VITILIGO.

This cutaneous disease is described by Prof. Duhring as an acquired disease, consisting of one or more sharply defined, rounded or irregular-shaped, variously sized and distributed smooth whitish spots, whose borders usually show an increase in the normal amount of pigmentation. In an analysis of 11,000 cases of skin disease, Dr. McCall Anderson only met with four cases. It is not confined to either sex, but is probably more frequent in early adult life. The pathologists tell us that there is an increase of pigment over the body, but in the author's experience it seems to prefer the hands, neck, face and head. Microscopically it is found that in the one instance there is a remarkable increase of coloring matter of the skin, which gives rise to the peculiar mottled or spotted appearance of that part. All authors agree in a favorable prognosis. It is usually easily distinguished from morphœa, chloasma, tinea, versicolar and lentigo. The author here gave in detail the differential diagnosis of this affection from those named.

Treatment, in his hands, has been very unsatisfactory. The use of internal remedies is only valuable when the system is out of order. In the generally prevailing belief that vitiligo is a nervous affection, he has used the hypophosphates combined with strychnia internally. This was associated with friction, frequent bathing, together with stimulating lotions or ointments, such as the bichloride of mercury and rose water, but none of these were followed with beneficial results. The only remedy giving any apparent benefit was electricity used twice a week, one pole applied to the nape of the neck, the other brushing the parts affected. He then reported five cases in detail. If this disease is a nervous affection, it is certainly located somewhere in the great sympathetic system, and by some disturbing it interferes with the blood in the distribution of pigment to certain parts of the derma. In all the cases reported, save one, it seems to have begun in the right side; in the exception it was not known where it commenced. The reader thinks that the cause is situated solely in the nervous system. There is a possibility that a primary cause may exist in the capillaries themselves, or in that part of the derma in which the pigment is deposited. Until there is more light thrown upon this interesting subject, which the author hoped his paper would draw out, and a definite knowledge obtained in regard to its exact pathology by practical demonstration, the reader will continue to believe it to be a purely nervous disease.

DR. DAN. MILLIKIN, of Hamilton, read a paper on

EMPYEMA; ITS TREATMENT BY DAILY ASPIRATION THROUGH A DRAINAGE-TUBE.

He reported the case of a patient who had typhoid fever followed by pneumonia, which ran into pleuro-pneumonia; the left pleural cavity was left full of pus. Dr. Millikin aspirated and drew off a quantity of very offensive pus; and this was followed by a daily withdrawal of pus until the patient complained of tightness or oppression about the chest, or pain, when a quantity of antiseptic fluid was thrown into the cavity. Fluid was withdrawn and injected at each sitting until it returned clear, and it was so thoroughly withdrawn at the end of each sitting that the patient was left in some slight distress. Recovery was rapid and complete.

A second case was that of a patient far advanced in tuberculosis, who developed a purulent pleurisy. He died, but long before death the pleural cavity had healed completely under the daily aspiration through the drainage tube.

Other things being equal, a small hole in the chest is better than a large one, and one hole is better than two. Unless it is positively indicated, the writer does not think that it is right to attack a rib. By the method indicated the pus flows only when the physician is present; in this way the clothing is kept clean. After each sitting the tube is closed by the pincette forceps, and then secured by adhesive plaster flat to the side of the chest, which make a valvular entrance. There is no danger of the tube slipping into the chest. The aspirator makes the operator master of all degrees of tension or vacuum; so, also, the lung on the opposite side is subjected to a daily stretching. The reader said that it was his object to leave his patients with a partial vacuum, which persists to an appreciable extent for almost an hour. This is a valuable kind of movement cure for the lung itself. If the lung cannot expand the lung must collapse. This is also favored by the partial vacuum. The mediastinal boundary between the pleural cavities also forms a convexity towards the affected side, and thus allows the active lung more room for expansion. The aspirator causes drainage without regard to gravity. A free opening cannot draw pus out of a pocket.

DR. P. S. CONNOR, of Cincinnati, said that he had seen aspiration fail, just as he had seen it succeed. He had seen patients grow worse after repeated aspiration, and then recover under free drainage.

DR. JOSEPH RANSOHOFF, of Cincinnati, said that he had altogether discontinued the use of aspiration in the treatment of empyema. All of the patients on whom he used aspiration died when they were tuberculous. He thought that early free incisions would cure most cases of empyema.

Dr. Kinzman, of Columbus, spoke in favor of free incisions, which should be made as soon as it was evident that the effusion was purulent.

Dr. P. S. Connor, of Cincinnati, read a paper on

VESICAL EXPLORATIONS.

Morbid conditions of the bladder, he said, may or may not be easily diagnosticated. Endoscopic examinations, for which so much was claimed at one time, have proved to be of little value. They are, however, much more satisfactory in the female than in the male. He considered the various modes of exploration, which should be supplemented by urinalysis, and chemical and microscopical examinations.

Digital examination, systematized by Sir Henry Thompson, affords information of the highest value. By the ordinary perineal section the membranous portion of the urethra is opened, the prostatic portion of the canal is dilated, and the finger tips can be brought in contact with every part of the bladder; the mucous surface can be palpated, its irregularities noted, the presence, location, size and character of a growth ascertained, and a concealed foreign body or a stone in the lower portion of the urethra found. In a recent case under his care the bladder was as thoroughly explored as though done *post mortem*. The objection that this operation is not successful in fleshy patients the reader thought unfounded. In every case, however fleshy, the finger can be introduced into the bladder, and made to sweep its surface. The operation is a simple one, requiring only the ordinary external perineal urethrotomy upon a grooved staff. It is almost devoid of danger.

Guyon and certain French surgeons advocate supra-pubic operations rather than the perineal section. The danger in the perineal section is not greater, and the advantage of exploration much greater. For every reason, both as respects diagnosis and treatment, digital exploration should always be made when the other more ordinary and longer practiced methods of examination have proved insufficient. In very young children lateral rather than median urethrotomy should be done, since such an operation does not increase the danger to life, and relieves the surgeon of the trouble, at times quite considerable, of dilating the prostatic portion of the canal.

Dr. Holland, of Cincinnati, in discussing the paper, spoke of rectal exploration particularly. He recommended the use of Syme's speculum of a large size. He thought perineal section simply for diagnosis a bold procedure, especially in private practice.

Dr. Ransohoff reported a case in which he did the operation. He spoke in its favor, and also discussed rectal examination.

Dr. Connor said that in many cases we are left entirely in the dark, and cannot make a diagnosis. He has made the operation about 100 times, and in no case could the death be attributed to it. He himself would much prefer being subjected to the operation than to be drugged, as many are. He has been much surprised to find with what ease the bladder can be explored after this operation; fully as completely as *post mortem*.

(To be concluded.)

FOREIGN CORRESPONDENCE.

LETTER FROM BERLIN.

(FROM OUR OWN CORRESPONDENT.)

CHOLERA NOTES.

Of great interest just now, especially after the startling array at Munich of Koch's theories, I transcribe some notes from a paper on this subject by Edgar March Crookshank, M.B., of King's College Hospital, London, who has been working up the matter under the very eye of Dr. Babes himself, who, next to Koch, is the best authority in Germany. "The last link in the chain of evidence required to establish the essential rôle of the cholera bacillus in the etiology of cholera is the effect of its inoculation in experimental animals. Nicati, Rietsch, Koch, Ermerigen and Babes have inoculated the bacilli in the duodenum with success. Babes had three satisfactory cases out of six. The operations were performed with all practical antiseptic precautions, and the appearance of the guinea-pig after death showed changes similar to those produced by cholera in the human subject, without any trace of peritonitis or putrid infection. From the mucus flakes and intestinal contents pure cultivations of the typical bacilli were obtained. Quite recently, Koch has introduced a method of inoculation without producing any external lesion, and the results have been successful in a great number of animals. My observations extended, however, to the examination of the intestinal tissue. The researches of Koch and others have shown that lesions always exist in the intestines, more or less, in all cases of cholera. A great part of the epithelium is missing, the superficial tissue is necrosed, the glands dilated and their epithelium swollen up, a great formation of mucus takes place, and a multiplication in the nuclei masses. The bacilli are found in the necrosed tissue, in the glands, and sometimes in the inflamed tissue more deeply situated. In the internal organs, especially in chronic cases, round or oval bacteria are sometimes found, which may be pathogenic (Babes), but they are not altogether characteristic of cholera, and are to be considered as a septic or pyæmic complication.

"From these researches we may conclude: 1. That the cholera bacillus of Koch is absolutely characteristic of Asiatic cholera. 2. That it is possible to demonstrate the presence of the bacillus in the tissues. 3. That there is every reason to believe, from recent results obtained by the inoculation of a pure culture of the bacillus in the lower animals, that it is productive of the disease.

"For we have seen that no one has found an organism which is identical with the comma bacillus of Koch in every respect. Again, if it has not been possible to demonstrate the bacillus in the tissue, we can only conclude that it is through an insufficient knowledge of the particular methods required, or that an insufficient search has been made. The method successfully employed by Babes consists in making very thin sections in recent cases of cholera and as soon as possible after death, and above all, from the vicinity of Peyer's patches. For their col-

oration an aqueous solution of fuchsin is employed (fabrique de Babe). The sections are left in this for 24 hours, then washed in sublimate solution (1–1000), rapidly passed through alcohol and oil of cloves, dried by pressure with four folds of filter paper after removal to the slide, and preserved in Canada balsam. I myself, quite recently, have stained and mounted sections after this method from material for which I am indebted to Dr. Babes, and have shown the presence of the bacilli in the tissue in vast numbers." At the recent meeting of the Cholera Conference Koch greatly enhanced the value of his researches, and has shown some astonishing results of inoculation, after first dosing the animal with opium.

At this conference Koch maintained his ground that the comma bacillus was *only* found in Asiatic cholera, Finkler, Prior, Klein, and Emmerich to the contrary notwithstanding. He showed slides prepared from the intestines of 79 different persons who died of cholera in Calcutta, and then demonstrated a series of pure cultures from France, Italy and Germany, all of which had the same characteristics. Experiments on animals and pure cultures all went to show that the comma bacillus was unlike any other bacillus, and that it was only found in true cholera. His experiments were made upon young pigs, and, to use his own words: "They received 5 ccm. of a 5 per cent. solution, and twenty minutes thereafter 10 ccm. of meat infusion containing comma bacilli were injected into the stomach. Immediately after this opium tincture (1 ccm. to a 200 gram animal) was injected into the peritoneal cavity." The animals remained narcotized from one-half to one hour. They died in from one to three days. Eighty-five pigs in all were experimented upon, and every scientific precaution was taken. Out of 150 doctors who studied at different times in his laboratory, only one had choleraic symptoms. Bacilli were found in his dejections, and a series of pure cultures were made from the case.

Prof. v. Pettenkofer did not think that Koch's experiments were at all convincing, and that they were not as satisfactory as Emmerich's investigations upon the Naples bacillus. Neither had Koch thrown any light at all upon the manner in which cholera invades human beings. Von Pettenkofer cannot believe that the comma bacillus is the cause of Asiatic cholera, but that it is an accidental product of the cholera process. So far, then, all that can be claimed with scientific accuracy is that the comma bacillus is distinctive; that it is unlike any other bacillus; that it is always found in Asiatic cholera; that it has been found in the mucous membrane of the intestines; and that animals inoculated with pure cultures have died with every symptom of true cholera—the comma bacilli were found in the intestines of the animal thus dying. The observations of Watson Cheyne (Path. Trans., Vol. xxx), and of F. W. Zahn (*Virchow's Arch*, Vol xcv), show that in the healthy and normal state "the blood and tissues contain no micro-organisms whatever, and that the assertions to the contrary are due to error in the experiment, *i. e.*, to accidental contamination. Consequently, it cannot be maintained that if in any focus of disintegration micro-organisms make their appearance, they are derived from those normally present; we must, on the contrary, believe that putrefactive organisms can be imported from parts connected with the outer world into distant localities in which disorganization of tissue has taken place." (Klein, "Micro-Organisms and Disease.")

Ceci believes in the existence of spores arising from the decomposition of the bacilli. Crookshank and Babes have examined over one hundred pure cultures of the comma-bacillus of Koch, of various ages and in various media. The round bodies frequently found, either alone or accompanying filamentous and irregular spirilli-form developments of the comma-bacillus, were found in all cases to be perfectly sterile. Babes has pointed out the diverse forms which result from cultivation under various degrees of temperature and altered soil. Klein's very recent assertions before the British Medical Association are bereft of every particle of strength in the light of Koch's report to the Berlin Cholera Conference (just ended). I have seen animals die from cholera Asiatica which had been inoculated with a pure culture taken from a patient who died with the disease in Paris. From the intestine of the animal a culture was made, and another animal inoculated, which also died.

The one *vital* question now is, the relation of this comma bacillus to the essence of Asiatic cholera. Is this organism itself the *virus*, or is the latter a product of the former? Klein propounds two possible theories: (a) It is possible that the chemical effects are produced by the presence and growth of these organisms, as truly as in the alcoholic fermentation of sugar the alcohol produced is a result of the presence of the saccharomyces; (b) But it is likewise possible that the organism elaborates a specific ferment, which, after a certain amount has been produced, sets up the putrefactive pathological changes.

The exact rôle of the comma bacillus in the etiology of cholera Asiatica remains unsettled. Arguments for and against the conclusions of Koch are perhaps equally strong on both sides, as evidenced by the discussions in the conferences on cholera held in Berlin, Munich and London. Inoculation, which completes the chain of evidence required to make good Koch's case, has, in his hands and in those of Nicati, Rietsch, Ermerigen, Babes and Watson Cheyne produced positive results; while in the hands of Klein and others no effect whatever was produced. In Babes' case three guinea pigs out of six inoculated in the duodenum showed the pathological lesions of cholera, and pure cultivations of the comma-bacilli were obtained from the intestinal contents. Klein and Gibbes, the English commissioners, have denied the existence of the cholera bacillus in the intestinal tissues. These have been demonstrated, on the other hand, by Babes, and confirmed by Crookshank, by staining the sections by Babes' method. This consists in cutting very thin sections in close proximity to a Peyer's patch, placing them in an aqueous solution of good fuchsin for 24 hours, washing in sublimate (1–1000), passing rapidly through alcohol and

oil of cloves, drying well by pressure of filter paper folded four times, and mounting in Canada balsam.

As affording a practical means for the differential diagnosis of true cholera, it cannot be too strongly insisted that whether or not the *causa causans* of the disease, the presence of Koch's bacillus is, nevertheless, absolutely pathognomonic of Asiatic cholera. In its biological characteristics it differs from all other curved bacilli. H. R. B.

DOMESTIC CORRESPONDENCE

OPEN AIR TREATMENT OF DIPHTHERIA.

EDITOR JOURNAL AMERICAN MEDICAL ASSOCIATION:

Dear Sir:—The mortality among young children by diphtheria in this part of the country under all methods of practice has been great, and my observations have impressed me with the belief that this is largely due to the custom of confining such victims in close apartments, and compelling them to inhale the air already polluted by their exhalations. The prevalence of croupal symptoms in many of the fatal cases prejudices the people against the admission of any fresh air, frequently keeping the little patients in small improvised tents within a closed apartment, with elevated temperature, and saturated with vapor. It seems to meunder such circumstances the contagion must of necessity find its way into the air-passages so constantly, and so concentrated, that new inoculation of deep-seated tissues results. The fear that the child will *take cold* is so strong that I have with difficulty been able to induce parents to adopt my plan of *open air treatment.*

I believe that the system in cases of diphtheria of a grave form, is so preoccupied by the presence of that poison that it is less likely to be affected by atmospheric vicissitudes than in health, and that they *cannot take cold.* Croup is more likely to occur by extension by continuity, and by inhaling a polluted atmosphere, than by pure air, however cold or damp. Three years ago I commenced treating severe cases by insisting on having the children kept out of doors, although it was mid-winter and in the presence of snow storms. I found some parents courageous enough to follow my instructions, and recovery followed in all the cases so treated, although some of them were malignant and desperate.

The medical part of the treatment was antiseptic, stimulating, and supporting throughout, generally using local applications to the fauces of diluted chlorine water, with compound tincture of iodine added; giving internally drop doses frequently of a mixture of glycerine two parts, and pure carbolic acid and compound tincture of iodine one part each. I have recently seen a case of a young child in consultation with Dr. John Morris, of this city, in which prognosis was a fatal termination. The parents, however, obeyed directions, keeping the child in its carriage in the open country during the daytime, and at night *every window* of the house *wide* open. Recovery followed speedily. I am at the present time treating a child in the same locality who was taken down a week ago with a very grave form of the disease, accompanied by a livid rash over the body, and this child is convalescing. He has been kept all the time on the open back piazza, and only taken into the open house when it stormed. The medical treatment in this case was as stated above, with the addition of salicylate of cinchonidia, wine and generous diet. Drop doses of the antiseptic were given every hour. The prone position was maintained in this case and in all of my cases, as much of the time as possible, and I would strongly urge upon medical attendants to insist on that position being maintained in children where the throat affection is severe, in order to prevent the exudations from gravitating during sleep into the deeper parts of the throat and infecting the larynx. If the prone position is perseveringly maintained, these exudations and discharges will gravitate constantly away from the throat towards the mouth and lips, and escape.

In closely built districts some difficulty may be encountered in finding a place out of doors for a bed. The roof of the house might in some cases be utilized, sheltering the bed by an improvised tent, but when possible, I contend that the patient should be constantly in the open air. Once conquer this dread of taking cold, and I think quite as much, if not more, may be accomplished in combating this disease by exposure than by medicine.

I hope you may find space for this desultory communication in your valuable JOURNAL, for I earnestly believe many lives may be saved by resorting to this principle of treatment.

R. B. BONTECOU, M.D.

68 4th St., Troy, N. Y., June 5, 1885.

BOOK REVIEWS.

THE ELEMENTS OF PHYSIOLOGICAL PHYSICS: AN OUTLINE OF THE ELEMENTARY FACTS, PRINCIPLES, AND METHODS OF PHYSICS; AND THEIR APPLICATIONS IN PHYSIOLOGY. BY J. M. GREGOR-ROBERTSON, M. A., M. B. C. M., Muirhead Demonstrator of Physiology, and Assistant to the Professor of Physiology in the University of Glasgow. Sm. 8vo., pp. xii, 528. 219 engravings on wood. Philadelphia: Henry C. Lea's Son & Co., 1884. Chicago: Jansen, McClurg & Co.

This book is one of the series of Manuals for Students issued during the past year by the well known publishers. It is intended as a companion to the student of physiology in his practical work in the laboratory. The first part is devoted to a consideration and explanation of the applications of Electricity and Magnetism to physiology and medicine, and embraces 148 pages. In the second part the Graphic Method is described, showing how small intervals of time are measured, explaining the myographion, and the transmission of movement. The third part is concerned with Fluids, at rest and in motion, and the Mechanics of the Circulation; Pneumatics are explained in part IV; Optics in the fifth part; and Sound, Heat and Dynamics in the sixth, seventh and eighth parts. The illustrations are

almost entirely of the necessary apparatus for the physiological laboratory, and, considering their diminutive size, are good. The author has not written a great book, nor was such his attempt; but it will be found a most useful companion to the student of practical physiology. The copious index necessary for a work of this character has not been omitted.

MODERN MEDICAL THERAPEUTICS; A COMPENDIUM OF RECENT FORMULÆ AND SPECIFIC THERAPEUTICAL DIRECTIONS, FROM THE PRACTICE OF EMINENT CONTEMPORARY PHYSICIANS, AMERICAN AND FOREIGN. By GEORGE H. NAPHEYS, A.M., M.D., etc. Edited by JOSEPH F. EDWARDS, M. D., and D. G. BRINTON, M. D. Eighth Edition; Enlarged and Revised; 8vo., pp. xv, 629. Philadelphia: D. G. Brinton. 1885. Chicago: Jansen, McClurg & Co.

The appearance of an eighth edition of a work, whether a compilation or an original treatise, is sufficient proof of its merits. We always regret the appearance of a book which is intended to take the place of a certain amount of necessary study, or which depends for its success on the supposed laziness of the student or practitioner. The book under consideration, however, does not come under this class. It has evidently been prepared with the presupposition that the reader has studied medicine so far that he may understand the therapeutic directions given therein; and if he has, its use as a reference book will be of much service. It is properly classified and indexed.

ASSOCIATION ITEMS.

OFFICIAL.

COMMITTEE OF THE AMERICAN MEDICAL ASSOCIATION ON INTERNATIONAL MEDICAL CONGRESS.

The committee as constituted by resolutions passed at New Orleans will meet at the *Palmer House*, Chicago, Ill., at 12 o'clock M. on Wednesday, June 24, 1885.

Your attendance is respectfully solicited.

R. BEVERLY COLE,
Temporary Chairman.

JOHN V. SHOEMAKER,
Temporary Secretary.

MISCELLANEOUS.

CHOLERA IN MADRID.—A dispatch from Madrid of June 10, states that the Guardia Civile have evacuated their barracks owing to the breaking out of cholera. There were seven cases of cholera in Valencia on June 9. All persons arriving in Valencia by sea are subjected to three days' observation, and all persons wishing to leave the city must show a properly attested certificate of good health. All persons arriving from towns where there are cases of cholera are promptly sent to the lazarettos. Already special wards in the hospitals have been assigned for suspected cases of cholera, and the authorities are visiting the poorer quarters of the city for the purpose of disinfecting the houses.

A CHAIR OF CLINICAL THERAPEUTICS IN KING'S COLLEGE, LONDON.—The *British Medical Journal* says: The Council of King's College have taken a new departure of considerable interest by creating a new Chair of Clinical Therapeutics, to which Dr. Burney Yeo, physician to the hospital, was elected professor. We think the College is to be congratulated upon taking a step which is of considerable practical interest to scientific teaching. The new chair is calculated to meet a want which, undoubtedly, is often felt in our medical schools, by affording opportunities for the examination and discussion with the pupils of important questions of a practical kind, bearing upon the treatment of disease.

BORIC ACID AS A PREVENTIVE OF MAMMARY ABSCESS.—RESSEIN ("Bull. gén. de thérap."), in a thesis on the use of antiseptics during lactation, says that, if any excoriation is detected, however slight, it should be dressed at once with a solution of boric acid (1 to 30) applied on a compress, the latter being covered with rubber cloth to prevent evaporation. The breast is to be carefully supported by means of proper bandages. Boric acid is preferred to other antiseptics because of its having no odor and not being poisonous.—*N. Y. Med. Jour.*, May 23, 1885.

CHOLERA IN SPAIN.—The cholera scourge which has been apparently slowly spreading in the province of Valencia, has also broken out in Castellon de la Plana, and in Madrid. In the latter city, it is claimed that eleven cases and two deaths have occurred. It is reported that the ship Jupiter has sailed from Valencia, Spain, where the disease is epidemic, bound for Baltimore, Md.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 29, 1885, TO JUNE 5, 1885.

Maj. S. M. Horton, Surgeon, ordered for duty as Post Surgeon, Fort Riley, Kan.

Maj. P. J. A. Cleary, Surgeon, ordered for duty as Post Surgeon, Fort Lyon, Col. (S. O. 78, Dept. Mo., June 1, 1885.)

Maj. J. M. Brown, Surgeon, assigned to duty as Post Surgeon at Fort Omaha, Neb.

Capt. Louis Brechemin, Assistant Surgeon, relieved from duty at Fort Omaha, Neb., and assigned to duty as Post Surgeon at Fort D. A. Russell, Wyo. (S. O. 49, Dept. Platte, May 29, 1885.)

Capt. F. C. Ainsworth, Assistant Surgeon, (Dept. Texas) ordered for temporary duty in Dept. Mo. (S. O. 58, Dept. Tex. May 25, 1885.)

Capt. Jos. Y. Porter, Assistant Surgeon, granted leave of absence for six months, on account of disability. (S. O. 126 A. G. O., June 3, 1885.)

Capt. Wm. B. Davis, Assistant Surgeon, granted leave of absence for one month, from May 25, 1885. (S. O. 122, A. G. O., May 28, 1885.)

First-Lieut. R. L. Robertson, Assistant Surgeon, leave of absence extended one month. (S. O. 123, A. G. O., May 29, 1885.)

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE FOR THE WEEK ENDED JUNE 6, 1885.

Walter Wyman, Surgeon, to inspect unserviceable property at Baltimore, Md., June 6, 1885.

H. R. Carter, Passed Assistant Surgeon, to inspect unserviceable property at San Francisco, Cal., June 6, 1885.

K. P. Battle, Assistant Surgeon, to inspect unserviceable property at New Orleans, La., June 6, 1885.